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THE NATURALIST

FOR 1898.

THE LAKE COUNTRY.

ALBERT HENRY PAWSON, F.L.S.,

Farnley, Leeds.

WHEREIN lies the great charm of the English Lake Country, for it is surely one of the sweetest spots on the earth? It is a mountain-land in miniature, exquisitely proportioned. The lakes are not too big; the valleys are not too wide; the hills are not too high. They all hold each other in balance. Their harmony is wonderful. In the choicest and loveliest parts of the district it seems as though nothing could be altered by a hair's breadth without loss of beauty. Grasmere Lake, for instance, has been called a pond, its size being so inconsiderable: yet, were it larger, Helm Crag and Silver Howe would be dwarfed, the inverted arch of Dunmail Raise would no longer curve in so huge a sweep, and the woods and pasture-ground would no more seem so rich and ample. Or if Fairfield or Helvellyn were to overhang the lake instead of these lesser heights, the insignificance of the water would be felt, the charm of the sweet vale would be lost. So Windermere and Ullswater may be little more than winding creeks compared with the lakes of other lands, but if they had been wider the hills about them would cease to be the majestic mountains which they now are. If the Langdale Valley were broadened, the Pikes, 'those lusty twins,' would at once lose half their grandeur.

The proof of this perfection of the Lake scenery is that, however one may wander, one always returns to it satisfied and content, and willing to maintain its beauties against all rivals. Comparisons for the sake of any disparagement on either side are proverbially odious, but in order to form a judgment on most subjects they are necessary, and in speaking of a mountainous country one's thoughts naturally turn to the Alps, and there is a desire to compare Lakeland with Switzerland. In point of fact they have little in common—they are not alike. The sublimity, the grandeur, the terrible inaccessibility, the awful

devastating power of those huge Alpine masses do not exist in our North Country Fells. The vast snowfields, the amazing glaciers, the incredible torrents, the avalanches, the mudstreams, have no counterpart in our peaceful land. It is true that in Switzerland there are in the height of summer sweet nooks where, even among the mountains, beauty seems to reign supreme, but this is only a transient aspect. For a few weeks in the year only do they allow themselves to be approached, and full soon they thrust back the intruders on their solitude, threatening them with death if they dare to linger longer.

Let us leave the Alps to their grandeur and their beauty of Medusa. Among those stern and awful heights Nature oppresses us with her omnipotence. But how sweetly does she smile upon us amidst these mountains of our own, bidding us enjoy only and fear nothing. We may climb every hill, we may ford every stream; the country sparkles with running water, and the music of the rills is always in our ears, but no torrent threatens us; the slopes rise steeply above meadow and pasture, but down their sides they send no stone-streams to destroy in a night the labour of generations. Here we have constant beauty, homely, happy, habitable beauty, summer and winter, autumn and spring.

It is the mixture of the rugged and the rural which is so delightful. The valleys are green and fertile, the mountains are grazed by the flocks even in the winter, and slates and ores are dug almost from their summits. In spring some of the hills are golden with gorse, in summer are wide stretches of purple heather, while in autumn the ripened bracken gives a russet colour to the fells which well becomes the harvest time. In the winter we have for a while a mimic Alps, but divested of all terrors, and often taking off its mask to show that this is only make-belief.

This sweet pigmy mountain-land is like none other elsewhere that we have ever seen or heard of. The lakes and tarns, peaks, passes, and valleys, the ridges and the *cols* are innumerable, and yet one can cross the whole country from north to south or from west to east in a summer day. The ordinary forces of Nature which have set in order most mountain ranges cannot have framed such a fairy land. It is too perfect, too finished, and on too small a scale. The erosion and denudation of our geologists will not account for it. The streams from these toy-mountains have not fretted out these valleys which, though really tiny, are relatively so enormously deep, nor did

these hills ever produce glaciers sufficiently powerful to scoop out the lake-beds. This is a country which sprang into existence directly from the hand of the Creator. It rose from the sea finished, a mountain-land fashioned in hidden fires.

It is to the igneous origin of Lakeland that it owes its wonderful ruggedness. A single hill is often like a mountain range, so many are its summits, slopes, and contours. Loughrigg Fell, for example, might be placed in a moderate-sized park, and yet it is as diversified as the Bernese Oberland or the *massif* of Mont Blanc. Again in what fine contrast to the volcanic hills rise to the north those smoother heights which have been hewn in softer stone. How nobly beyond the twisted and molten crags of Bow Fell and Glaramara sweep the graceful curves of Skiddaw and his attendant mountains, whose rocks, though pressed and altered, have not been passed through the crucible!

Whence comes the extraordinary abundance of water which this district produces, and to which it owes half its attractiveness? Where else on six hundred square miles of land can be found such a plenitude of lakes and pools, brooks, cascades, and running streams? Everywhere is the splashing, gurgling, and gushing of water restlessly hastening to the sea, yet it tarries long enough on the way to cover the country with winding lakes like broadened rivers, out of one of which Manchester drinks her fill apparently without wasting it more than Elijah did the widow's cruse. The position of this hill-country on the verge of the land overhanging a broad channel of the Atlantic is the cause of all this moisture. The warm air coming rain-laden from the west is suddenly chilled on this high ground and must needs let fall the water which it can no longer carry. Thus the whole land is continually steeped in humidity.

The extraordinary verdure of the country attracts instant attention, even in England, where this quality is everywhere noticed by strangers. Every wall is clothed with moss, the ferns fill every ditch, and, refreshed by the clouds, they flourish even on the open mountain sides.

The impervious nature of the rocks has much to do with the beauty of the land. But little rain sinks through these solid slates and porphyries; most of it remains on the surface, coursing down the steep slopes in rills and brooks, pouring in waterfalls, tossing in cascades, carving ghylls and gorges, and spreading itself in lakes among the flat meadows of the valley. Another effect of the hard rocks is seen in the great clearness of

the streams. Except in the runnels which issue from the peat mosses in the high basins of the fells, there is little colour in the lake water; even after prolonged rains it is always bright and sparkling, and brings with it little sand or mud.

With rain in such plenty, and with hollows ready forged in these impenetrable rocks, a network of lakes must naturally result. But how happy the coincidence! Had the hills been, like Ingleborough, built of limestone, or framed in chalk like the Wolds and Downs, this heavy rainfall would have worn them into mud and clay, and would have hollowed them into caverns and gorges, but it would have left us no sweet running water, no lonely mountain tarns, no lovely lowland lakes. Had these volcanic hills been placed more inland, or in a region of little rain, they would have been as waterless and sterile as the Esterelles of the Riviera.

It is this exuberance of water no doubt which has given the finishing touches of loveliness to this igneous mountain-group. Cast in the fire, an image of wondrous beauty, water has done the chisel-work which was necessary for perfection. She has smoothed the slopes in contrast with the rugged summits, giving here and there a stream of screes as a foil to their beauty; she has cut out ravines and chasms and strewn the glens with rocks; she has curved the outlines of the hills and has levelled the green valleys, so that the eye loves to rest upon them; and still in the clouds that veil the mountains, in the brooks that leap down their sides, in the lakes and streams which bathe their feet, she remains the guardian Goddess of the land.

NOTE—BOTANY.

***Scrophularia balbisii* (Hornem.) in North Lancashire.** — Some exception has been taken to my statement that I have 'seen no true *aquatica L.*,' because, being an aggregate, it is impossible. This is true, but I must confess my ignorance, when writing the notice, of the synonymy of the plant. So will readers who are charitable cross out the statement? A much greater lapse, to my mind, is that I omitted to explain what *balbisii* is in the 9th edition of Lond. Cat. It is due to the kindness of Mr. W. A. Clarke, F.L.S., of Oxford, that I am able to do so. When it was determined that true *balbisii* Hornem. was not present in Britain, it was referred to *S. oblongifolia* Loisel., and this is what I should have noted. So that when Mr. Baker used the name *balbisii* he meant that the commoner form was present, and not *umbrosa* Dum.—S. L. PETTY, Ulverston, 9th Nov., 1897.

NOTES AND NEWS.

We have transferred the printing of our journal to a new firm, in reality old friends under a new name, and have delayed the appearance of the present number in order to select new type, and paper more suitable for printing illustrations.

THE ROCKS OF PATTERDALE (ULLSWATER).

P. Q. KEEGAN, LL.D.

REGARDING Patterdale as extending from Stybarrow Crag and Silver Hill on the north to Hartsop How and Brock Crags on the south, the rocks presented to the petrological investigator are of a very mixed and diversified character. They all are grouped under the eruptive rocks of the Borrowdale series, and are supposed to be of lower Silurian age. The State geologists represent them on their map, sheet 101 S.E. (new series, sheet 29), as being composed for the most part of volcanic ash, with, however, several well-marked and distinctive sheets and bands of lava intermixed therewith. It seems to me that this view is correct. The rocks immediately flanking the valley on each side, i.e., forming the faces of the hills as you regard them when traversing the valley, are almost entirely of volcanic ash, and the sky-line summits of the mountains are likewise of the same material, except in a few places, such as Annstone Crag and portions of the summit of Place Fell, where the dark and jagged outline betokens the presence of lava. A general review of the present condition of these rocks reveals the fact or supports the supposition that either the rocks forming the hills on the western side have resisted decay and disintegration more successfully than those on the eastern side, or else that they actually have in the past been considerably abraded and destroyed, and are now in a position of comparative stability.

Obviously, in order that a complete and adequate description of a series of rocks comprised in a mountain valley may be supplied, it would be necessary to survey the entire field, and to take as many sections as possible. This, of course, would involve herculean labour and much time, which may, however, be saved and so far compensated for by securing a small series of sections at certain definite and suitably-selected spots. Thus, for instance, where a series of mountain arms or upland reaches push forward together and constitute, with intervening valleys, the western flanks of Patterdale, a rock-section from the extremity of each arm may suffice to convey a tolerably adequate idea of the nature and constitution of the rocks on that side of the field of investigation. And, on the other hand, where, as on the eastern side thereof, the hill screens, save for the shallow gaps of Boredale Hause and Angle Tarn Gill, present an unbroken superficies for a lengthy stretch, a series of sections of

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the rocks which break out at certain intervals there will be found amply suitable for the same purpose.

Of the two principal varieties of the eruptive rocks which, as aforesaid, compose the visible areas of the Patterdale mountains, we will commence with a description of the lavas. Somewhat about six sections of these from different points have been prepared; and the first feature one notices about them, even with the naked eye, is that they are markedly dissimilar one from another. There is a well-defined bed of lava on the north-western slope of Silver Hill, whence it strikes in a rather broadish sheet or dyke in a south-westerly direction, straight into Ullswater. Two sections from this have been prepared for the microscope. The structure is decidedly porphyritic, with a ground-mass which has not apparently been entirely converted into a felsitic base. The large or 'porphyritic' crystals still retain for the most part their original crystallographic outlines. The larger of these have been felspar, and are still comparatively unaltered, showing only thin streaks and fragments of a pale green chlorite, and sundry patches of oxide of iron. There are some pseudomorphs of pale chlorite after augite, one or two of them still retaining the exact octagonal outline of the usual cross sections of the latter mineral. The ground-mass presents an appearance similar to that of a fresh, unaltered andesite, but the characteristic felspar laths are not readily discernible with a low objective in ordinary light; under polarised light, however, or by using a higher magnification, a large number of short, stumpy microlites and sections of the same are seen strewn over a matrix of light-coloured glass, which is streaked and patched with chlorite flakelets, and small granules of epidote, etc. On the whole, while this rock is clearly an andesite, it has evidently been somewhat metamorphosed, but the tendency towards calcite formation is not strikingly obvious. There is a very fine-grained rock from a quarry above Bleawick (Place Fell) which is wholly composed of a ground-mass closely similar to the above, and without any porphyritic crystals; it seems connected with two narrow bands of lava which strike north-west from near the head of Ullswater. Following the course of the mountains southwards, we arrive at a point above Dubhow Farm, where a grisly screen of vertical rock attests the presence of an intrusion of lava. A section of this rock reveals it to be very similar to some of the augite-andesites in the vicinity of Derwentwater. It is a greenish-tinted rock, with large crystals visible to the naked eye. Under the microscope it is seen to be, as regards the ground-

mass, an andesite more definitely characteristic than the one above described. The porphyritic constituents have been crushed out of all regular shape, the larger ones being mostly changed to bright green chlorite, and all more or less dusty through apparently enclosing considerable portions of the ground-mass which surrounds them. This ground-mass is exceedingly remarkable; it is brown, and plentifully bestrewn with granules of oxides of iron, but the felspar laths and microlites are clearly and abundantly seen, although rather irregular in size and shape, with the usual fluxion structure, and all apparently quite fresh and unaltered; there is no distinct pseudomorph after augite on the slide. A rock from Angle Tarn Gill shows numerous well-formed felspar crystals very much altered, and embedded in a ground-mass which is quite dark between crossed nicols, owing, no doubt, to an extensive infiltration of iron oxides. This rock might be, and doubtless has been, mistaken for an ash; but the unbroken and uncorroded felspars, and some symptoms of the presence of microlites in the base, seem to prove it to belong to a lava flow. The craggy, fluted, and riven aspect of the steeps below Brock Crags betoken the presence of lava outcrops; but we will now cross over to the western side of the vale.

A rock on the roadside not far from Brothers Water is fine-grained, and suggests a structure more basaltic than usual; and the microscopic revelations quite confirm this idea. There are very few appearances of porphyritic constituents, and such as there are have quite lost their original contours, being eaten up, as it were, by the 'base.' The latter consists almost entirely of large, lath-shaped crystals of altered felspar, with some small prisms of the same; the whole embedded in a dusty and granular ground-mass, thickly paved with both large and minute grains of oxide of iron. The general structure might be that of an andesite or tholeiite approaching a basalt, but extensive metamorphosis renders the correct diagnosis rather difficult. Advancing northwards down the valley, we gradually approach a vast projection of steep, dark, and craggy eminences crowned with a cone. This is Annstone Crag, an offshoot of St. Sunday Crag; and it may be pronounced to be the most signally conspicuous and indubitable development of lava that is to be seen anywhere in the eastern portion of the Lake District. Two sections of this rock here exposed were prepared, one from the summit of the mountain, the other from the base thereof. Save for the detestable alteration, the microscopical appearances

would be extremely satisfactory. The general structure is undoubtedly that of an andesite, but the large felspar crystals, though well formed and long and narrow, are not tabular (as in the Silver Hill rock); some of them when fresh would doubtless have shown clear twinning on the albite plan; there are also a few well-shaped crystals of a bright emerald green chlorite after augite; the ground-mass is dark and dusty and liberally infiltrated with iron; nevertheless there are very decided remains of a felted aggregate of large and lengthy felspar laths. The whole rock is greatly corroded, and so lavishly dusted and bespattered with ferruginous matter (there are several hæmatite veins close at hand), that we must rest content with the endeavour to recall what must originally have been a very beautiful and interesting structure. The section from near the base of Annstone Crag has a somewhat similar appearance to that from the summit, but there is comparatively little iron; the large felspars are altered to calcite, and have large patches of a very pale chlorite matter; the ground-mass is very light in colour, with the outlines of the characteristic laths very clearly discernible in many places, and the whole intervals between these diffused with a pale green chloritic dust. Passing on to Hall Bank our researches, enter somewhat debateable ground. A section of the rock which flanks the main valley is of a very indefinite character; the ground-mass is very fine, and there are a number of what once have been large crystals; but the whole structure is very ferruginous and dubious, so that whether it is a lava or a sort of ash conglomerate is very difficult to determine. The conspicuous cliff which forms the lake-side shoulder of Stybarrow Crag is formed of a very hard rock. According to the Geological Survey Map it is set down as a volcanic ash and breccia, or a bedded slate; but I am inclined to think that it is a lava somewhat akin to the specimen described above from Angle Tarn Gill, but with the difference that here the felspar laths in the ground-mass are more numerous and more easily distinguishable. The principal feature about the rock, however, is its flinty and uncleavable character; and it is readily seen that large veins of clear quartz have extensively penetrated its substance, imparting to it a compactness and toughness which are not common among the rocks in the neighbourhood, and, so far as I know, are confined to the lavas exclusively.

We will now endeavour to describe the volcanic ash of Patterdale, a by no means easy matter. It is not so abundant as might be supposed, but is well developed in a quarry on

Place Fell above Side Farm, and also on portions of Bleas Fell and the ground to the north of that hill. Generally speaking, the volcanic ash of the lake district rocks is distinguished from the lava by the fact that the so-called 'ground-mass' is nearly always irregular and with no definite structure; it contains no acicular crystals or even distribution of magnetite grains, though sometimes chloritic matter occurs along lines of flow; moreover, the larger 'porphyritic' crystals are, as a rule, almost always corroded, broken, or unshapely, and no definite relationship can be traced between these and the altered ferro-magnesian minerals or the ground-mass wherein they are imbedded. The same secondary or alteration products can in general be detected in the ashes as in the lavas, but in the former there is evidently a much larger amount of clear and darker green chlorite than in the latter. Slides prepared from the ash-slate of Place Fell quarry show a very large number of whitish turbid forms of an approximately crystal shape, which are composed mainly of calcite after felspar, but there are one or two clear and glassy ones of the latter mineral fresh and unchanged; along with these we observe a much smaller number of clear chlorite crystals doubtless after augite, but the original contours are lost and abraded. These larger constituents are immersed in a powdery 'base' much more injured and disordered than they are, it being very cloudy and composed of a semi-opaque heterogeneous powder bestrewn with patches of chlorite, dark brown oxides of iron, etc.; and 'we may look upon it that the original andesitic and other volcanic dust of the rock has decomposed in such manner that the augite, etc., gave rise to chlorite with garnet, while the felspathic part of the mixture was largely altered to mica' (Hutchins). A rock from the ground north of Bleas Fell is a very good example of this volcanic ash. Moderately large crystals, broken, deformed, and corroded, and nearly all altered to calcite, jostle against one another with only small seams and intercalations of a dark speckly 'base,' while, intermixed with these, there are a goodly number of clear non-pleochroic chlorite forms about the same size, and appearing deep blue under crossed nicols, together with large patches of oxide of iron. An ash rock near at hand is very fine-grained, and is made up of a very fine speckly matter with the usual sprinkling of chlorite. A specimen from an old quarry on Bleas Fell showed a similar heterogeneous conglomerate, but with smaller constituents, exhibiting, however, the usual calcareous alteration products close set in a larger and more variegated amount of 'base,'

which is liberally dusted and bespattered with ferruginous matter.

On the whole, we think our researches have helped us to detect in Patterdale three different varieties of igneous rocks: (1) the lava strictly so-called, which is undoubtedly andesitic; (2) a lava with petrographical features obscure and of difficult diagnosis; (3) volcanic ash. It was the confounding, through hasty and defective observation, of the second with the third of these varieties that has led the State surveyors to erroneously conclude in a general way that the ash deposits form the bulk of the volcanic rocks of the lake district.

Oct. 1st, 1897.

NOTE—ORNITHOLOGY.

Kingfisher, etc., near Huddersfield.—Last Thursday, December 23rd, I was very pleased to see a Kingfisher (*Alcedo ispida*) about the ponds in the grounds here. I am told the bird visited the same ponds years ago, but I had never before seen one in the district. Two or more Pheasants (*Phasianus colchicus*), both sexes, doubtless strayed from the neighbouring woods, have also recently made themselves quite at home in the garden, and we frequently see them walking about and searching for food quite close to the house, like barn-door poultry.—GEO. T. PORRITT, Crosland Hall, Huddersfield, Dec. 30th, 1897.

NOTE—GEOLOGY.

Erratic Boulders in Lincolnshire.—I was pleased to see a note in the December 'Naturalist' from Mr. F. M. Burton, of Gainsborough, relative to these boulders. His words of caution are very opportune, both with regard to Yorkshire and Lincolnshire. The danger of including pieces of ballast, etc., in our boulder lists is certainly the greatest near our ports and waterways, but our experience in this part of Yorkshire teaches that the greatest care must also be taken to avoid the same error in the inland districts.

A short time ago, a member of the East Riding Boulder Committee, working west of the Wolds, at a point tolerably remote from both railway and river, noticed at the side of a footpath some blocks of stone having a glaciated appearance. Among these were granites, dolerites and other rocks, obviously foreign to the district. These would have undoubtedly figured in our boulder report, had the investigator not accidentally learnt, from an old villager (probably the only man who knew the facts), that the stones were brought from 'foreign parts' by the late Mr. —— at least fifty years before. Other similar cases are known to me.

There is also a story told, for which I am not responsible, about a certain dilapidated milestone in East Yorkshire, which suffered still further defacement at the hands of an enthusiastic glacialist, and which very narrowly escaped inclusion in a Y.N.U. report.

Carefully compiled lists of our Yorkshire and Lincolnshire 'roadside' boulders are not without value, but may I suggest how much more satisfactory and important are the records obtained from our numerous clay-pits, gravel-pits, excavations for foundations, drains, etc. For not only is possible error with regard to the source of the boulder escaped, but the characteristics of the different beds, from which the boulders come, can be noted and recorded.

May I add that lists in which the boulders are merely described as sandstones, limestones, granites, etc., can be of little use to anyone.—JNO. W. STATHER, 16, Louis Street, Hull, 24th Dec., 1897.

THE LATE JOSEPH WILLIAM DUNNING.

Mr. J. W. Dunning, M.A., F.L.S., etc., died suddenly on Friday, the 15th October last, at his residence, 4, Talbot Square, Hyde Park, London, W. Born at Leeds in the year 1833, he was educated privately under tutors until 1851, when he entered Trinity College, Cambridge. He obtained a Classical Scholarship in 1855, took his B.A. degree in 1856, and after proceeding to the degree of M.A. in 1859 was shortly afterwards elected a Fellow of his college. In January 1855, he was admitted a law student, and on the 26th January, 1861, he was called to the Bar by the Honourable Society of Lincolns Inn. From that time until about five years ago, he enjoyed a considerable practice as an equity draftsman and conveyancer at 12, Old Square, London. About seven years ago Mr. Dunning had a paralytic stroke, which partially deprived him of speech and obliged him to retire from the practice of his profession, and a second stroke, which he had on the 15th October, was the cause of his death.

In his early boyhood, Mr. Dunning was an enthusiastic collector of lepidoptera, and his name is familiar to most entomologists as being one of the first to capture, in this country, *Agrophila sulphuralis* (now known as *Emmelia trabealis*). Speaking of this species, Mr. Stainton, in his 'Manual,' says it 'used to be a great rarity, but a schoolboy, spending his midsummer holidays at Brandon, having taken it, this insect found its way into all our collections, and Mr. Dunning "awoke and found himself famous."'

Mr. Dunning joined the Entomological Society in 1849, when a lad of 16 years of age; the Linnean Society in 1860, and the Zoological Society in 1864. He was Secretary to the Entomological Society from January 1862 to January 1871, and was Vice-President several times, namely, in 1875 under the Presidency of Sir Sidney Smith Saunders, in 1877 under Professor Westwood, in 1879 under Sir John Lubbock, in 1885 under Mr. McLachlan, and again in 1890 under Lord Walsingham. In 1883 and 1884, he was President of the Society.

It is believed that Mr. Dunning had not many opportunities of giving attention to field natural history after his early boyhood, and his contributions to the Transactions and Proceedings of the Entomological Society are not numerous, but his presidential addresses were admirable in point of style. He was the compiler and editor, or at least one of the most active

compilers and editors, of the 'Accentuated List of the British Lepidoptera,' published by the Entomological Societies of Oxford and Cambridge in 1858, and it is believed that he bore, if not the entire at least the greater part, of the cost of the publication of this list.

His claim to the respect and esteem of all Fellows of the Entomological Society of London is mainly due to the warm interest which he always took in the affairs of the Society, and to the munificent donations which he constantly contributed to its funds. Over and over again when the Society was in financial difficulties and the treasurer's balance-sheet showed a deficit, Mr. Dunning came forward and paid the amount requisite to again place the Society on a proper financial basis. The writer of the present notice remembers that when he was first nominated secretary, in January 1886, the then treasurer informed him that there was a serious deficit. Hearing this, he called on Mr. Dunning at his chambers, and told him the state of the Society's finances. On being furnished with the exact figures, Mr. Dunning at once drew a cheque for the required amount, nearly £40. Quite recently he sent, unsolicited, a donation to the Society of £45!

In addition to constant donations of money and books, Mr. Dunning, by his influence and energy, obtained for the Society its incorporation by Royal Charter, in the year 1885. Knowing how many societies in London, of at least equal importance to the Entomological Society, have failed to obtain a charter, the Fellows of the Society cannot but feel deeply grateful to the deceased for having procured the Charter, and also for having paid all the fees and other expenses in connection with the grant of the same.

One of his earliest contributions to zoological literature was a note in the 'Zoologist,' about the year 1849, recording the occurrence of *Cerura latifascia* at Headingley. He was one of the oldest members of the Yorkshire Naturalists' Union, and in addition to his annual guinea subscription he readily contributed, when donations were asked for, a cheque for £10.

In private and professional life, Mr. Dunning was a pleasant and genial companion. His generosity to his friends and associates was equal to that shown to the Entomological Society, with which he had been so long connected. He was a member of the 'Oxford and Cambridge,' the 'Garrick,' and other clubs, and his bonhomie and high spirits endeared him to all sorts and conditions of men.—H.G.

ACULEATE HYMENOPTERA OF NOTTINGHAMSHIRE: A PRELIMINARY LIST.

Rev. ALFRED THORNLEY, M.A., F.L.S., F.E.S.,

South Leverton Vicarage, Lincoln.

As I can find no lists of the Hymenoptera of the county of Nottingham, I publish the following short one, and hope to follow on with similar preliminary lists of Tenthredinidæ, Ichneumonidæ, Cynipidæ, etc. The present list, which includes 64 species, has been drawn up chiefly from my own captures, which Mr. Edward Saunders has kindly verified; and some older records which have been kindly furnished me by Mr. W. Denison Roebuck. Captures, other than my own, are all acknowledged. The names in every case are those employed by Mr. Saunders in his valuable monograph of the group. I shall be very glad to have my attention called to any other records of Hymenoptera taken in the county of Nottingham. The species here enumerated have all been captured casually along with insects of other orders, and have not had any special attention given them; and no doubt special work in the group would soon result in doubling or trebling the number. For those who would like to take up the study of the Hymenoptera Aculeata, Mr. Saunders has published some exceedingly valuable and useful hints on collecting Hymenoptera in 'The Entomologists' Monthly Magazine' for 1897.

ACULEATA.

HETEROGYNA (ANTS).

Lasius flavus DeG. South Leverton, common.

Lasius niger L. South Leverton, common.

Tetramorium guineense Fab. (*kollari* Sm.). An introduced species. Retford, one ☿ example (S. Pegler).

Myrmica rubra L.

Race ***lævinodis***. South Leverton, common.

Race ***ruginodis***. South Leverton, common.

FOSSORES.

Sapyga clavicornis L. Recorded by J. F. Stephens (Ent. Mag., Jan. 1836, iii. 415) as having been taken near Nottingham by R. Bakewell. This record is repeated by W. E. Shuckard (Indig. Foss. Hym., 1837, pp. 47 and 250)

with the additional information that both the ♂ and ♀ occurred in abundance. Also repeated by Saunders (Hym. Acul. Brit. Islands).

Trypoxylon figulus L. South Leverton, one example, July 1897.

Pemphredon lugubris Latr. South Leverton, common.

Passalœcus corniger Schenck. South Leverton, four examples, July 1897.

Passalœcus gracilis Curt. South Leverton, one example, July 1897.

Psen pallipes Pz. South Leverton, two examples, July 1897.

Mellinus sabulosus Fab. 'Nottingham' (Edward Saunders, *Brit. Hym. Acul.*, p. 115).

Crabro leucostomus L. South Leverton, one ♀, 1896.

Crabro podagricus V.d.Lind. South Leverton, one ♂, 1897.

Crabro elongatulus V.d.Lind. South Leverton, one ♀, July 1897.

Crabro dimidiatus Fab. South Leverton, common.

Crabro chrysostomus Lep. South Leverton; Grove; Treswell Wood; both sexes, not uncommonly.

DIPLOPTERA (WASPS).

Vespa vulgaris L. Retford district, common.

Vespa germanica Fab. South Leverton, common.

Vespa rufa L. South Leverton, not uncommon.

Odynerus callosus Thoms. South Leverton, common.

Odynerus parietum L. South Leverton, common.

Odynerus trifasciatus Oliv. Treswell Wood, two ♀s, July 1897.

Odynerus antilope Pz. South Leverton, one ♀, 1896.

Odynerus sinuatus Fab. South Leverton and Treswell Wood, two examples, both ♀s.

ANTHOPHILA (BEES).

Prosopis communis Nyl. South Leverton, four ♀s, July and August 1897.

Prosopis hyalinata Smith. South Leverton, one example, July 1897.

Sphecodes pilifrons Thoms. Treswell Wood, one ♂, September 1897.

Sphecodes ferruginatus Schenck. South Leverton, two ♂s, September 1897.

Halictus rubicundus Christ. South Leverton, common.

Halictus cylindricus Fab. South Leverton, common.

Halictus smeathmanellus Kirb. South Leverton, one ♀, 1897.

Andrena albicans Kirb. South Leverton, common.

Andrena rosæ Pz.

VAR. ***trimmerana*** Kirb. South Leverton, common.

Andrena nitida Fourc. South Leverton, occasional.

Andrena fulva Schr. South Leverton, one ♂ at sloe blossom, April 1897; one ♀, May. Grove, one ♀ (Rev. G. Shipton).

Andrena clarkella Kirb. South Leverton, one ♂, March 1896.

Andrena chrysosceles Kirb. South Leverton and Treswell, common, but all ♀s, May 1897.

Andrena labialis Kirb. Grove, one ♀ (S. Pegler).

Andrena nana Kirb. Treswell, one ♂, May 1897. South Leverton, one ♀, July 1897.

Andrena wilkella Kirb. South Leverton, one ♀, June 1897.

Nomada alternata Kirb. South Leverton; Grove; not uncommon.

Nomada ruficornis L. South Leverton, one ♀, June 1897. Treswell Wood, one ♀, July 1897.

Nomada borealis Zett. Treswell Wood, two examples, ♂ and ♀, May 1897.

Chelostoma florisomne L. South Leverton, three ♂s, June and July 1897.

Cœlioxys rufescens Lep. South Leverton, two ♂s, July 1897.

Megachile circumcincta Lep. South Leverton, one ♂, 1896.

Megachile centuncularis L. South Leverton, common.

Osmia rufa L. South Leverton; Grove; common. Nottingham; a nest of this species was taken out of a lock of a greenhouse on Mapperley Plains, Nottingham. It seemed to contain about 50 cocoons. The nest was taken out in November, and given to Prof. J. W. Carr, who opened one of the cocoons, when a male example emerged.

Osmia cærulescens L. South Leverton, common.

Anthophora retusa L. (***haworthana*** Kirb.). 'Nottingham' (See A. H. Davis, in Loudon's Mag. N.H., April 1832, vol. 5, pp. 245-248).

Anthophora pilipes Fab. South Leverton; Grove; common.
Psithyrus rupestris Fab. Retford, one ♂, 1897 (S. Pegler).
Psithyrus vestalis Fourc. South Leverton; Treswell; April and May 1897; all ♀'s.
Psithyrus campestris Pz. Retford, one ♂, 1897 (S. Pegler).
Psithyrus quadricolor Lep. South Leverton; Grove; May 1897.
Bombus venustus Smith. South Leverton, common.
Bombus agrorum Fab. South Leverton, common.
Bombus hortorum L. South Leverton, common.
VAR. ***subterraneus***. South Leverton, one ♀, July 1897. Another seen a few days after.
Bombus sylvarum L. South Leverton, one example, ☿, 1897.
Bombus lapidarius L. South Leverton, common.
Bombus pratorum L. South Leverton, common.
Bombus terrestris L. South Leverton, both varieties, common.
Apis mellifica L. **Hive Bee.** South Leverton, common.

NOTTINGHAMSHIRE NATURAL HISTORY.

We print above the first of a series of papers on the natural history of Nottinghamshire. The next instalment is to be a reprint of Drayton's stanzas of 1622 from the 'Poly Olbion,' in which he enumerates the Thirty Fishes of Trent, accompanied by notes on their present occurrence from the pen of Prof. J. W. Carr. We have for some years intended to reprint this song, and count ourselves fortunate in securing so capable an annotator. Others of the series of preliminary lists of the insects by the Rev. Alfred Thornley will follow; and we may say that the list of Nottinghamshire Coleoptera which he is preparing will be a very full one, including as it does the fauna of so exceptionally rich an area as Sherwood Forest. We hope that other Nottinghamshire naturalists will join in the work, and can assure them that Mr. Thornley and Prof. Carr will cordially welcome all assistance in so much needed a task.

We may well make use of the phrase 'much needed' when we consider the paucity of the literature which concerns the fauna and flora of Nottinghamshire. The present writer can speak with some degree of knowledge on the subject, as he has for a good many years devoted much attention to collecting bibliographical records for all the counties of Northern England, and he finds that short notes and incidental records for Notts are but scanty. There has not been anything like the activity and the profusion with which, among others, the Yorkshire naturalists have filled our periodical literature and the pages of our standard text-books with records and observations.

Much good work has, nevertheless, been done, as the names of Deering, Ordoyno, and Howitt, Sterland, Whitaker, and Whitlock, Rothera, Lowe, Musson, Gain, and Dodd, Fisher and Carr, are sufficient to show, but their co-operators have never been numerous, and we trust that the series of papers now commencing will stimulate investigation and induce Nottinghamshire naturalists to contribute frequent papers and short notes, for which the pages of 'The Naturalist' will always be open.

LINCOLNSHIRE BOULDERS.

THIRD PAPER.

For previous papers see 'The Naturalist,' 1897, pp. 103-105; and 1897, pp. 283-284.

JOHN H. COOKE, F.G.S., etc.

Mr. Burton remarks, in his note on 'Erratic Boulders in Lincolnshire,' in the December issue of 'The Naturalist,' that it does not at all follow that boulders found 'at corners near houses and such like places' are to be relied upon as having been deposited there by ice action. Of course not. It is so evident how they got into these positions that comment is unnecessary. With few exceptions, all of the records I have published in 'The Naturalist' have reference to the boulders of the Wold district. These boulders, whether they occur at gate- or house-corners, no doubt were deposited by ice action in the *immediate* neighbourhood of the places in which they are now found. The Hessle clay, that flanks the eastern Wolds and covers up the old sea cliff, is full of these erratics. They are a serious impediment to farming operations, and the farmers, therefore, dig them out of the fields, and, to get them out of the way, they either cart them to the nearest gate-post or farm-yard, or they send them into the village to be used as guards for the street corners. It must not be forgotten that a ton of basalt or granite is not a very large boulder. It is estimated that 10 to 11 cubic feet of these dense rocks weigh a ton: a boulder, therefore, measuring two feet each way is not likely to be carted very far, merely for the sake of placing it at gate corners. This is the explanation of the origin of the boulders that are found in North Thoresby, a village that is built on Hessle clay; and it also explains the origin of the enormous numbers of andesitic boulders that are to be seen in the streets and inn-yards of Louth.

Some time last year a fine basalt boulder was excavated from James Street, Louth, from out the Hessle clay, and it was carted to the Corporation yard. Mr. Burton's strictures have special reference to the North Thoresby records: a very brief consideration of local circumstances is sufficient to show that his contention as regards these and other Wold records is unsound. Of the boulders of the Trent district I have nothing to say, as I have so far done little or nothing in that direction. It would add greatly

to the value of work of this description if observers would append a note to each record indicating the nature of the glacial beds in the district in which the boulder is found.

OLD CLEE.

Basalt. A. 2 feet 3 inches × 1 foot 6 inches × 1 foot 6 inches. Corner of Cleethorpes Road. Hessle clay.

,, R. 1 foot 6 inches × 1 foot 6 inches × 1 foot 6 inches. Corner of road to Old Clee. Hessle clay.

,, R. 1 foot 6 inches × 1 foot 3 inches × 1 foot 5 inches. Corner of road to Old Clee. Hessle clay.

,, R. 1 foot 6 inches × 1 foot × 1 foot. Corner of road to Old Clee. Hessle clay.

,, R. 2 feet 6 inches × 1 foot 9 inches × 1 foot 6 inches. Corner of road to Old Clee. Hessle clay.

,, R. 1 foot 9 inches × ? × ? Partly buried. Locking's farmyard. Hessle clay.

,, A. 3 feet 10 inches × 2 feet × 2 feet. Near outhouse, Locking's farmyard. Hessle clay.

Dolerite. A. 2 feet × 1 foot 3 inches × 1 foot. Opposite Grammar School. Hessle clay.

In the yard of the first cottage on the left hand entering Old Clee there are 12 basalt boulders over a foot in diameter.

Granite. R. 1 foot × 9 inches × 9 inches.

The farmyard opposite the church also contains many rounded basalts and granites.

Basalt. S.A. 1 foot 6 inches × 1 foot 6 inches × 1 foot 6 inches. Musson's farm. Hessle clay.

Pink sandstone. 1 foot 6 inches × 1 foot 3 inches × 1 foot 3 inches. Musson's farm. Hessle clay.

Basalt. R. and scored. 1 foot 6 inches × 1 foot 3 inches × 1 foot. Brown's farm. Hessle clay.

,, A. 2 feet × 2 feet × ? Brown's farm.

HUMBERSTONE.

Basalt. R. 2 feet 3 inches × 1 foot 6 inches × ? Cross roads. Hessle clay.

SCARTHO.

Pink granite.
Porphyritic granite.
Augite granite.
} On the roadside, near the Wesleyan chapel. About 1 foot in diameter. Origin doubtful. Marine gravels mixed with boulder clay.

Basalt. R. 1 foot × 9 inches × 9 inches. Marine gravels, mixed with boulder clay.

CLEETHORPES.

In Cleethorpes Cemetery there are seven large boulders. Five of these are basalts, two are granites. They have been dug out of the Hessle clay, when grave digging.

Rhomb-porphyry. A rounded boulder on the shore opposite the golf links.

LACEBY.

Porphyritic granite. A. 1 foot 6 inches × 1 foot × 9 inches.
,, ,, R. 1 foot 2 inches × 1 foot × 1 foot.
,, ,, 1 foot 3 inches × 1 foot 3 inches × 1 foot.
,, ,, 1 foot × 1 foot × 1 foot.

And many smaller ones.

Basalt. A. 2 feet × 1 foot 3 inches × 1 foot.
,, A. 1 foot 3 inches × 1 foot × 1 foot.
,, R. 1 foot 1 inch × 1 foot × 10 inches.

All in the brook bed near the bridge. Marine gravels mixed with boulder clay predominate in this neighbourhood.

Basalt. A. 2 feet × 1 foot × ? In the drain, ten yards from the bridge.

,, S.A. 2 feet × 1 foot 6 inches × 1 foot 6 inches. Front of Mr. Markham's house.

,, S.A. 1 foot 9 inches × 1 foot 6 inches × 1 foot 3 inches. Front of Mr. Markham's house.

Porphyritic granite. R. 1 foot 3 inches × 1 foot 3 inches × 1 foot 3 inches. Mr. Field's stable.

Dolerite. R. 2 feet 3 inches × 1 foot × 1 foot. Mr. Field's stable.

Basalt. A. 2 feet 8 inches × 1 foot × 10 inches. Forming steps of a meeting house.

,, A. and ice marked. 1 foot 6 inches × 1 foot 2 inches × 9 inches. Forming steps of a meeting house.

Granite. S.A. 2 feet × 1 foot × 10 inches. Opposite school.

Basalt. S.A. 2 feet 6 inches × 1 foot 3 inches × 1 foot. Opposite rectory.

,, R. and ice marked. 1 foot 6 inches × 1 foot 6 inches × 1 foot. Waterloo Inn.

The yard of this inn contains a fine assortment of basaltic and granitic boulders.

NORTH THORESBY.

Basalt. S.A. 2 feet × 1 foot 4 inches × 1 foot 6 inches. Corner of the Granby.

Sandstone. R. 2 feet 8 inches × 1 foot 9 inches × 1 foot 6 inches. Corner of Mr. Fawcett's house.

LUDBOROUGH.

Basalt. A. 3 feet × 1 foot × 1 foot. Mr. Marshall's yard.
Flint. A. 2 feet 6 inches × 2 feet × 1 foot. ,,
Basalt. A. 2 feet × 1 foot 9 inches × 8 inches. Mr. Stock's yard
,, A. 2 feet 11 inches × 1 foot 11 inches × 2 feet. Mr. Taylor's yard.
,, S.A. 2 feet 6 inches × 2 feet × 1 foot 8 inches. Mr. Atkinson's yard.
,, A. 3 feet 6 inches × 2 feet 2 inches × 1 foot 7 inches. Mr. Atkinson's yard.

The glacial beds in this district are Hessle clays, but in some of the ditch sections the Hessle may be seen passing into the Purple clays. Fragments of micaceous schist are common in the clays turned up by the plough.

CADNEY.

Quartzite. 3 feet × 1 foot 9 inches × 1 foot 3 inches. Mr. Placket's gate.
,, 4 feet × 3 feet × 1 foot 2 inches. Manor house.

Mr. Cameron alludes to a similar rock near Howsham, in his Survey report. He considers them to have come from the chalky boulder clay, but says nothing of their origin.

NOTE—FISHES.

A Large Lincolnshire Eel.—In the Museum here is a very fine Eel (*Anguilla vulgaris* Flem.) caught at Grantham, in the Nottingham and Grantham Canal, on October 31st, 1896. It measured 46½ inches in length and 10 inches in girth, and weighed 8 lbs. 6 oz.—J. W. CARR, University College, Nottingham, 22nd Dec., 1897.

NOTE—GEOLOGY.

Erratic Boulders in Lincolnshire.—The note of warning anent the recording of erratics in this county, to which Mr. Burton has given utterance in the last issue of 'The Naturalist,' comes very opportunely. That warning should, however, have also been extended to the boulders that occur in isolated places along the Lincolnshire shore-line. How necessary this warning is, has but very recently been demonstrated by a boulder recorder, who visited Sutton-on-Sea, and who found there a collection of what he considered to be most interesting glacial erratics. He chipped them, noted their sizes and positions for the county records, and sent the chips away to be sliced for a more detailed examination. It now appears, however, that there are people living at Sutton-on-Sea who can attest that these boulders were brought there as ballast by the fishing boats. The geologist who has made this mistake is a most accurate and able observer, and he will, I have no doubt, at once delete these 'records' from the county boulder list. I merely mention this instance to show how thoroughly I agree with Mr. Burton's plea for extreme caution in these matters.—J. H. COOKE, Thorndale, Lincoln, 13th Dec., 1897.

BIRD-NOTES FROM THE HUMBER DISTRICT.

JOHN CORDEAUX, J.P., F.R.G.S., M.B.O.U.,

Great Cotes House, R.S.O., Lincoln; Ex-President of the Yorkshire Naturalists' Union.

(Continued from the 'Naturalist' for August, 1897, p. 240.)

Acrocephalus turdoides (Meyer). **Great Reed-Warbler.** July 28th. When botanising to-day in company with the Rev. E. Adrian Woodruffe-Peacock, we were greatly surprised to hear what could only be the noisy rattling song of this very rare wanderer to England, coming from the reed-beds in Madam's Creek (the old bed of the Haven) at Tetney Lock. I was certain of the species, having heard it abroad, and remembering the song so well expressed by the words, 'Kar-ra-kar-ra-kee-kee.' This straggler to our shores had probably been some time in the country, as I found its noisy song had attracted the notice of passers that way, and particularly of an old shepherd, who had, he told me, unsuccessfully watched to get a sight of the performer. Mr. G. H. Caton Haigh, to whom the land belongs, on two occasions tried to force the bird from the cover of the reeds by a rope trailed across, but the only result was the dislodgement of numbers of Reed and Sedge-Warblers. Subsequently, the bird was both seen and heard by Mr. Haigh's man in a neighbouring hedge. He described it as large as a thrush, brown above and lighter below. The notes could be heard at a very considerable distance, and by those walking on the sea embankment some hundreds of yards away.

Spatula clypeata (Linn.). **Shoveler.** July 23rd. Some Shovelers on the wing over the fitties to-day with many Mallard and Teal. These were no doubt birds bred in the district, except, perhaps, some of the Teal, which were far too numerous to be all local birds.

Gallinago cœlestis (Frenzel). **Common Snipe.** Several on the fitties during the last week in July, and subsequently. We had more Snipe this year than for some years past, particularly the first week in December.

Totanus glareola (J. F. Gmelin). **Wood-Sandpiper.** 28th July. I flushed a pair from an inland creek close to the coast at Tetney. Mr. Haigh says he has found this species more frequently in this month than any other, invariably on the inland creeks close to the coast, but not on the fitties.

Totanus ochropus (L). **Green Sandpiper.** There are always a number on the fitties in the months of July and August; these are immigrants. I have, however, no doubt it occasionally remains to nest. A pair, and later six birds, have frequented our trout stream in this and the adjoining parish all through the summer and up to this time, the first week of December, and one first week in January 1898.

Phylloscopus trochilus (L.). **Willow-Wren.** August 8th. This was the first wet day since the end of May. Great numbers of Willow-Wrens were on the move, and again there was a very marked movement a month later, in the first week of September. Mr. Haigh noticed scores in the coast hedges and buckthorn on the 3rd, with innumerable other small immigrants, as Whitethroat, Yellow-Wagtail, one Redstart, Meadow-Pipits, Wheatears, Whinchat. Very few Willow-Wrens on the 4th.

Tringa subarquata Guldenstädt. **Curlew-Sandpiper.** On August 26th, when with the Lincolnshire Naturalists' Union on the Frampton fitties of the Lincolnshire Wash, our members came upon six of these little waders in one of the old land creeks. They were young of the year, and excessively tame, and permitted a close inspection before they could be induced to get on the wing. My first note of them at Spurn is on September 3rd; also Little Stint and Greenshank, of the first two a considerable number. This year of Jubilee, 1897, will always be memorable amongst ornithologists from the fact that the first eggs of this species known to science were discovered and brought home by Mr. Popham from an island at the mouth of the Yenisei, in Arctic Asia. This is probably the very western fringe of its breeding range, the main migration being much further eastward. Although frequently so plentiful on the east coast of England in the autumn, the Curlew-Sandpiper is very seldom seen in the spring. In the former season, we have, so far, few data regarding its line of migration from Arctic Asia, whether this is round the North Cape and along the Norwegian island-fringe, or by the Gulf of Finland and the Baltic; or, again, by a land flight across Northern Asia and Europe. It has always been such a rare visitor to Heligoland that the former route appears the most probable, the flights striking across the North Sea from the southern shore of Scandinavia.

Phylloscopus sibilatrix (Bechstein). **Wood-Warbler.** August 28th. Occasionally seen here in spring and autumn on migration, but rare at any other time. To-day I saw the Wood-Warbler, Willow-Wren, Coal-Tit, and Marsh-Tit in the garden, and on the same bush.

Cypselus apus (L.). **Swift.** August 29th. A flight over the house, N. to S., at 6 p.m. The rays of the western sun, catching the under side of their wings, made them gleam like satin. On September 3rd continuous flights were passing along the coast at the Spurn, but only a few on the 4th. Mr. Haigh saw hundreds along the Lincolnshire coast, between Tetney and North Cotes, on the 1st of September, and between Grainthorpe and Donna Nook thousands on the 2nd; only one on the 3rd. All these were moving from N. to S. It will be seen that it was on this day the largest migration was visible on the coast of Holderness. These probably passed some distances at sea, so as to be invisible from the Lincolnshire coast.

Muscicapa atricapilla Linn. **Pied Flycatcher.** Aug. 27th. Mr. Haigh saw two or three immature Pied Flycatchers to-day with Redstarts and Whitethroats in the coast hedges, and along the sea embankment scores of Pied Wagtails and a few Yellow-Wagtails and Wheatears. And on Sept. 1st at Tetney and North Cotes, besides the Swifts, many Sedge Warblers in standing corn, also Yellow-Wagtails and Whinchats. On 2nd, Cuckoo and a Corncrake. On Sept. 18th Mr. Alfred Fieldsend of Lincoln sent an immature male Pied Flycatcher, caught on board a trawler 150 miles from land, along with a Wheatear.

Saxicola œnanthe Linn. **Wheatear.** September, first week, numerous on passage near the coast, particularly at the Spurn on the 3rd, less on the 4th; on the former day plentifully distributed on the drain banks in Great Cotes Marshes. On this day also I noticed several of the large tree-perching race.

Mareca penelope (L.). **Wigeon.** September 2nd. First arrivals on the coast.

Ardea cinerea Linn. **Common Heron.** September 2nd. Mr. Haigh saw a flock of about thirty on the coast between Donna Nook and Grainthorpe.

Motacilla melanope Pallas. **Grey Wagtail.** I have not seen these since the end of May. On September 8th a pair

came to the window near their old nesting place ('The Naturalist,' 1897, p. 237) and have frequently appeared about the premises since.

Hirundo rustica Linn. **Swallow.** Sept. 3rd and 4th. Continuous flights at the Spurn going south. Mr. Haigh saw a pair on October 19th.

Asio accipitrinus (Pallas). **Short-eared Owl.** September 8th. A few on coast on migration.

Anthus trivialis (Linn.). **Tree-Pipit.** Sept. 10th. Mr. Wm. Eagle Clarke tells me were numerous at this date at Easington.

Anser brachyrhynchus Baillon. **Pink-footed Goose.** Sept. 18th. On this day a flock of about seventy passed over Brackenborough Hall, near Louth, from the sea towards the wolds. This is the earliest record I have for the county. Mr. F. Boyes (Beverley) has recorded a small gaggle of fourteen on the Yorkshire Wolds on the 9th of September, this also being the earliest record for that district.

Stercorarius [?]. **Skuas.** September 9th. Mr. Haigh, between Mablethorpe and Tetney Haven, saw several, also a Razorbill and some Curlew-Sandpipers.

Motacilla lugubris Temminck. **Pied Wagtail.** Sept. 10th. Mr. Haigh reports very large flocks on the coast.

Turdus musicus Linn. **Thrush.** Sept. 27th. The immigration on to the east coast has commenced, and very considerable numbers have arrived.

Tringa maculata Vieillot. **Pectoral Sandpiper.** September 28th. An adult male shot on the Humber coast in Easington parish, Holderness, as already recorded in 'The Naturalist,' 1897, p. 352. The irides were dark, legs and feet ochreous-yellow.

Gallinago gallinula (Linn.). **Jack Snipe.** September 29th. First observed.

Anthus obscurus (Latham). **Rock Pipit.** September 29th. Mr. Haigh saw a flock of about a dozen on the coast at Tetney.

Turdus merula Linn. **Blackbird.** September 29th. A few coming in; also Lapwing, the latter travelling to N.W.

Circus cyaneus Linn. **Hen-Harrier.** Mr. J. Ostler Nicholson informs me (in litt.) that Mr. Hunsley, of Kirton-in-Lindsey, recently watched a Hen-Harrier for an hour or two beating to and fro over a turnip-field on the wold, the

bird several times coming quite near him; it was baited part of the time by rooks. At the commencement of this century this was an exceedingly common species in the county.

Mr. G. H. Caton Haigh has kindly forwarded the following notes for October.

October 5th. E.; light, fine. Small flocks of Goldcrests in hedges at North Cotes, also Grey Crows, Robins, Thrushes and Blue Tits, Curlew Sandpiper also, and Jack Snipe and one Little Stint. A Garden Warbler shot.

October 12th. W.N.W.; fresh, fine. Two or three Goldcrests, with Twites, Larks, Starlings, and Mistletoe Thrushes, also Lapwings.

October 14th. S.E.; light, wet. A Water Rail in hedge by sea bank; Goldcrests, Blackbirds, Thrushes, Robins, Wagtails, and Merlin.

October 15th. S.; fresh, fine. A good many birds moving, many Hedge Sparrows, also Blackbirds, Thrushes, Redwings, Twites, Robins, Rooks, Blue Tits, and Chaffinch. A Wood Pigeon picked up dead. Purple Sandpiper shot from a freshwater creek at North Cotes. [It is unusual for this species to be seen inland. On Oct. 19th, in 1896, I shot one, in handsome winter plumage, from a rain-pool in a fallow at Easington. Nat., 1897, p. 18.].

October 19th. N.; light, rain. Several flocks of Wood Pigeons at Grainsby; Woodcock.

October 22nd. E.; light, fine. Siskin seen on hedge at Holton.

October 23rd. E.; fresh, dull. Many birds moving, one Fieldfare, a Grey Wagtail, also Goldcrests, Robins, Blackbirds, and Mistletoe Thrushes, Redwings, Tree Sparrows, Rooks, Grey Crows, Larks, Lapwings, and one Kingfisher. Fairly large flocks of Wood Pigeon in the park. Pintail Duck shot.

October 26th. E.; light, fog in morning. Redwings, Blackbirds and Larks crossing over Grainsby.

October 27th. S.E.; light, fog. Rooks and Jackdaws coming in from E. in large numbers. Many Snipe and Lapwing. In the hedges Goldcrests, Redwings, Fieldfares, and Blackbirds. A good many Sparrow-hawks. One Wren, the first seen this year on coast. Some Wild Swans passed over Grainsby, making a great noise.

October 29th. E.; light, fine. A few Tree Sparrows in Grainsby low plantation and several Sparrow-hawks.

October 30th. E.; light, fine. A few Rooks, Jackdaws, Starlings, and Larks moving. Several Snipe. Jays have been unusually abundant in the park and woods all the month.

Mr. Haigh further remarks that the notes show a steady and gradual influx of birds, without any movement that can be called a 'rush.' The nearest approach was on Oct. 23rd, and again on 27th, when large numbers of Rooks and Jackdaws came in. The movement of Goldcrests, Robins, and Thrushes has also been very marked, although slow and gradual. Swans in October also are unusual.

Charadrius pluvialis Linn. **Golden Plover.** Since the great gale and floods from W., N.W., and N., on the night of November 27th and morning of the 28th, our marshes have been visited by immense flocks of Golden Plover and Lapwing, the latter mixed with some Redshank. It is years since I saw so many Snipe, but these are in 'whisps,' and very wild.

Botaurns stellaris (Linn.). **Bittern.** December 11th. I flushed a Bittern when shooting to-day; it has not been molested.

NOTES—TRICHOPTERA.

***Œcetis ochracea*, etc., near Huddersfield.**—A few days ago Mr. B. Morley, of Skelmanthorpe, brought me some Trichoptera, etc., among which were several of interest. A fine specimen of *Œcetis ochracea*, which Mr. Morley took at Denby in June last, makes an addition to the Yorkshire list. There were several *Rhyacophila obliterata*, which occurred commonly at Denby Dale in September, and for which Scarborough was previously our only county record. *Limnophilus stigma* from Skelmanthorpe, and *Chrysopa tenella* from Deffer Wood, are also worthy of mention.—GEO. T. PORRITT, Crosland Hall, Huddersfield, Nov. 18th, 1897.

***Limnophilus bipunctatus* near Selby: Another Addition to the Yorkshire List.**—On August 30th last the Rev. C. D. Ash, whilst working for lepidoptera, took a trichopteron, which he at once forwarded to me. At the time I thought it was a specimen of *Limnophilus stigma*, and set it as such, but as, on putting it in my cabinet, I saw it differed somewhat from any specimens of that species I previously had, I examined it closely with a view to determining whether it was not some other species, but without success, though my doubt as to its being *L. stigma* was strengthened. I did not possess *L. bipunctatus*, and supposing it to be a considerably different insect will account for my not comparing the specimens with the description and figures of that species. Being in London a few days ago, I asked Mr. McLachlan to show me his specimens of *L. bipunctatus*, when I at once saw they were wonderfully like this specimen. A re-examination to-day, and comparison with the figures in McLachlan's 'Trichoptera of the European Fauna,' settled the matter in a few minutes. It is a good addition to the Yorkshire list, as it has not been found commonly anywhere in Britain.—GEO. T. PORRITT, Crosland Hall, Huddersfield, Dec. 10th, 1897.

MOSSES NEW TO YORKSHIRE,

FOUND IN 1897.

WILLIAM INGHAM, B.A.,

Organizing Inspector of Schools, 47, Haxby Road, York.

Ceratodon conicus Lindb. This rare moss I found in July 1897, at Hackness, during the meeting of the Yorkshire Naturalists' Union. It was growing on bare ground by the side of the stream, and was in good fruit, which, however, was not quite ripe.

On June 4th I found the same moss in mature fruit near the High Force, Teesdale. The above gatherings, both in fruit, are of additional interest from the fact that Dr. Braithwaite in his 'British Moss Flora' was obliged to have recourse to *foreign* specimens in order to make his beautiful drawings of the *fruit* of this moss. According to our present knowledge, this moss is rare, but, as it was recorded from Sweden and Finland by Dr. Lindberg, there is no reason why it should not be well distributed over Yorkshire. The moss has a great resemblance to small forms of the very common *C. purpureus*, and, no doubt, has been often passed over for that moss. *C. conicus* is, however, distinct enough in several points from the well-known *C. purpureus*, and, being once known, it may be detected in the field without the aid of the microscope.

Hypnum Wilsoni Schp. This rare moss I found in excellent condition in a siliceous bog on Skipwith Common, March 26th, 1897. The habitat for the supply of this moss, hitherto, has been the sands at Southport, Lancashire. Both the above mosses have been kindly verified by Mr. H. N. Dixon, M.A., F.L.S., author of the Students' Handbook of British Mosses.

Timmia norvegica Zett., mentioned in 'The Naturalist' for August 1897, demands further notice from me. On August 20th, I visited the White Force a second time, and found a little more of the moss, not quite like the former gathering in appearance. Mr. Slater, of Malton, suspected this second gathering of being very near to *Dichodontium flavescens* Lindb. I then sent both the gatherings to Mr. Dixon, who declared all to be *D. flavescens*, although he said the *Timmia* in question and the *Dichodontium* have a 'distinct likeness under the microscope.'

January 1898.

Dr. Braithwaite confirmed my naming of the first gathering, viz. as *Timmia norvegica*, but remarked upon its small size in comparison with the Scotch plant. On September 23rd Dr. Braithwaite wrote: 'I did not know until I compare the plates of *T. norvegica* and *Dichodontium flavescens*, how very close they were in the structure of the leaves, and I now think (after a second examination) the latter must claim the starved specimen from Teesdale. A transverse section of the leaf seems the only certain means of separating the mosses, as the conical papillæ in the former are the only absolute distinction.' Again, on October 7th, the Doctor wrote: 'As to the *Timmia*, until I compared it with the *Dichodontium*, I had no idea the two mosses were so exactly alike in structure. The balance is in favour of its being *D. flavescens*, though not a respectable sample of either genus.'

Since writing the above, I have heard that *Ceratodon conicus* has been reported from the East Riding by a Mr. Bailey. I shall be glad to have a confirmation of this, if possible, as there seems to be some mystery connected with the 'find.'

NOTE—MOSSES.

Some Mosses observed near Lancaster in August 1897.—I send a list of mosses I collected about Lancaster when spending a few days' holiday there in August 1897. They are chiefly from about the canal side, near the Lune, etc. The neighbourhood has doubtless been worked sometime, and the list does not perhaps contain new records, but it was interesting to myself to see what could be found, and I send it for what it is worth. The order is that of Dixon and Jameson's book, but the nomenclature is not always theirs.

Polytrichum formosum Hedw.
Dichodontium flavescens Dicks.
Dicranella heteromalla Hedw.
Dicranoweissia cirrhata Hedw.
Fissidens adiantoides Hedw.
Grimmia pulvinata Dill.
Barbula muralis Hedw.
Barbula rubella B. & S.
Barbula rigidula With.
Barbula convoluta Hedw.
Barbula unguiculata Hedw.
Leptodontium flexifolium Dicks.
Weissia viridula Hedw.
Barbula tortuosa L.
Cinclidotus fontinaloides Hedw.
Encalypta streptocarpa Hedw.
Orthotrichum rivulaire Turn. Caton.
Webera carnea L.
Bryum cæspiticium L.
Bryum capillare L.
Mnium rostratum Schrad.
Homalothecium sericeum L.
Brachythecium plumosum B. & S.
Eurhynchium prælongum B. & S.
Eurhynchium prælongum var. stokesii Turn.
Eurhynchium swartzii Turn.
Eurhynchium striatum B. & S.
Rhynchostegium serpens B. & S.
Amblystegium serpens B. & S.
Amblystegium irriguum B. & S.
Hypnum stellatum var. protensum B. & S.
Hypnum commutatum Hedw.
Hypnum cupressiforme L.
Hypnum molluscum Hedw.
Hypnum palustre L.

—W. P. Hamilton, Shrewsbury, Oct. 15th, 1897.

Naturalist,

ROMANTIC RICHMONDSHIRE.

Romantic | Richmondshire. | Being a complete account of the | History, Antiquities and Scenery | of the picturesque | Valleys of the Swale and Yore. | By | **Harry Speight,** | Author of 'The Craven and North-West Yorkshire Highlands'; | 'Nidderdale and the Garden of the Nidd,' etc. | Illustrated. | London: | Elliot Stock, 62, Paternoster Row, E.C. | 1897. | Entered at Stationers' Hall.

[8vo. cloth, 525 pages—with map and 23 full page views.]

It is not from want of appreciation that the appearance of our review of this—the latest of Mr. Speight's unapproachable works on local topography—has been delayed, but simply from pressure upon our time and upon the space 'The Naturalist' has at disposal. As we have so often pointed out, we know of no writer to equal Mr. Speight in his possession of the ability to make a topographical work so full of living, real interest. He proves himself a worthy successor to such sterling topographers as Clarkson, Whitaker, and Plantagenet-Harrison, all of whom have treated of the same district or parts of it.

It is beyond our scope to deal with the purely topographical aspect of Mr. Speight's work, beyond saying that it treats of the beautiful valleys of Swaledale and Wensleydale, which together constitute the old baronial liberty of Richmondshire. The work is on pretty much the same lines as the author's previous ones dealing with Craven and with Nidderdale, and is equally profusely illustrated. The indexes and tables of contents are full and adequate, and there are separate tabulations of the Rainfall in the whole of the North Riding, and of the Altitudes of various mountains, roads, passes, towns and villages. The cover is embellished with a block of the view from Willance's Leap, near Richmond. The volume divides into two portions, the first dealing with Swaledale and the second with Wensleydale. Looking through the book with a naturalist's eye, one notes the frequent allusions, sometimes direct, sometimes incidental, to geological and anthropological and meteorological phenomena, to birds and butterflies, plants and animals, to the trout of the Oxnop Beck, which Dr. Day named *Salmo fario swaledalensis*, to the large tracts of native juniper bushes which form so prominent a feature in the vegetation around Reeth, to the heavy rainfalls and frequent floods which play such havoc in Swaledale, to the lead mining which was once a staple industry of the same dale, to the old monkish herb and flower gardens at Coverham and Jerveaulx Abbeys, to those remarkable pits in the limestone called the 'Buttertubs,' and to the former existence

of wolves and other beasts of the forest throughout the whole region. Indeed the whole of Richmondshire seems to have been a preserve for these animals of the chase, and the evidences of their presence are plain and manifest in many ways, as place-names, ancient traditions and records all show. The distinguished men who sprang from this region are all duly noted, and amongst the scientific ones we note the well-deserved

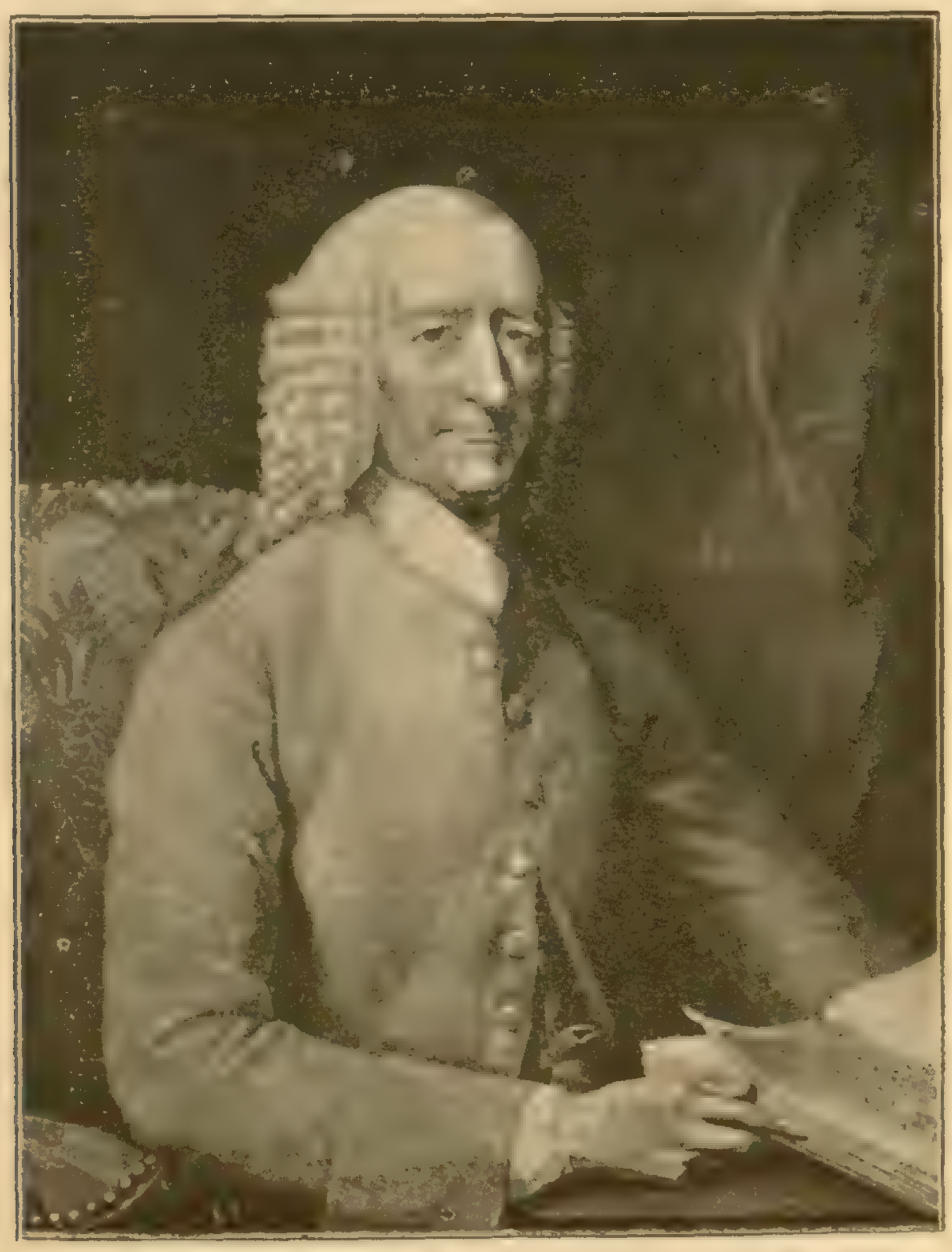
ANGLO-SAXON SKELETON,

Found in Wensley Park, about 150 yards west of the churchyard: from its careful orientation, had evidently received Christian burial.

compliments paid to Mr. William Horne, the veteran palaeontologist of Leyburn, than whom no one has done more for the investigation of the geology of Wensleydale. The work of the two Keartons, the ornithologist and the photographer, Swaledale men from Thwaite, are also noted, and a portrait (which we are allowed to reproduce) is given of Dr. John Fothergill, F.R.S.,

Naturalist,

the botanist of the district. Another block which we reproduce is that of an Anglo-Saxon skeleton found in Wensley Park. Mr. Speight seems scarcely capable of omitting anything, his references are so copious and so minute, but we notice he does not give much notice to the mountain tops. Possibly he may be of Mr. Gilbert Baker's view, and regard the Swaledale hills as nothing but 'cragless, treeless, undulated sweeps of hill,' with



DR. JOHN FOTHERGILL, F.R.S.

The pioneer of Natural History in Wensleydale. Born at Carr End, Wensleydale, 1712; died in London, 1780.

'their surfaces a monotonous iteration of peat bog, heather and swamp.' And yet these same hills yield the finest of views. For instance, Lovely Seat (which might well be named 'Lovely View') gives a magnificent panorama on a clear day which can be seen in one grand sweep, without change of position beyond turning on one's own axis. It is an accessible mountain, too,

its top only about three-quarters of a mile off the summit of the Buttertubs Pass. Then again, the view from Ladies' Pillar on Mallerstang Edge includes the whole range of the hills of the English Lake Country, from Helvellyn to Skiddaw. Altogether, we have but to commend this latest work of Mr. Speight's as by no means inferior in interest and in value, to any of his previous works.—W.D.R.

NOTES AND NEWS.

By the death on the 24th of November of the Rev. F. A. Malleson, M.A., vicar of Broughton-in-Furness, at the advanced age of 78, another of the old school of botanists has gone from us. A young man when his friend, W. Borrer, was middle-aged, he learned in a good school. Although a writer on varied subjects, graceful essays on Selbornian topics amongst them, he has left little to show how good a botanist he was. In his early days he put together a flora of Sussex, from the observations of himself and his friends, which has never, I believe, been printed, though quoted occasionally by H. C. Watson in 'Topographical Botany.' They did not quite agree on the manner of recording localities, or the quotations would have been more frequent. In later life the plants of his Broughton parish interested him so much that for a while he entertained the idea of a flora of his area (South-west Cumberland and a piece of North Lancashire). It never came to fulfilment; the difference between such work *now* and in his early years no doubt deterred him. The few localities recorded in 'The Naturalist,' May 1893, are all that I know of, contributed to a scientific journal. Perhaps as a friend of Mr. Ruskin (years ago) it is only justice to him to say he did not appreciate, and professed not to understand, the botanical innovations proposed in Mr. Ruskin's revision of the natural orders of plants. He was a many-sided man, and could entertain a child with as much pleasure to it as he gave to the late Bishop of Wakefield, or to the Italian monk (who knew no language but his own) with whom he conversed in a Latin jargon on botanical matters. The monk's Latin was ecclesiastical and Mr. Malleson's a trifle rusty, still they enjoyed the few hours permitted to them.—S.L.P.

The Quarterly Review for January 1896 (p. 253) had the following remarks on Mr. Ruskin as a systematic botanist:—'In his "Proserpina" Mr. Ruskin ran a tilt against Latin names, chiefly on the ground that they had been no help in teaching him botany, and boldly proposed an entirely new system of arrangement and nomenclature. He suggested a plan which "to be thoroughly good must be acceptable to scholars in the five great languages, Greek, Latin, French, Italian, and English; and it must be acceptable by them in teaching the native children of each country." It is scarcely possible to imagine a system less fitted for its purpose than the scheme he proposed. He arranged all plants under thirteen classes with Greek names, beginning with *Charites*, which included Roses, Apples, and Strawberries, and ending with *Moiridæ*, which included *Conium*, *Papaver*, *Solanum*, *Arum*, and *Nerium*. Plants were classified according to their supposed moral or æsthetic qualities. Mr. Ruskin seems to have been quite serious in his suggestion; but no one else has taken it seriously, and the book remains as one of the prettiest of Mr. Ruskin's works, adorned with all the delightful language and beautiful drawing of which he is such a master—a literary curiosity, and nothing more.' To which we may add, that a grouping of poisonous genera, without regard to structure, to make an order, seems a rough and ready way of smoothing difficulties, but in reality the difficulties are increased. In 'Hortus Inclusus,' 1889, p. 55 and onward, are letters of Mr. Ruskin's to Miss Susan Beever on this subject, and very curious they are, but quite worth the attention of any botanist, if he has nothing very pressing or important on which to employ his time.—S.L.P.

FISHES OF THE NOTTINGHAMSHIRE TRENT IN 1622, RECORDED BY MICHAEL DRAYTON IN THE 'POLY-OLBION'; WITH NOTES ON THEIR PRESENT OCCURRENCE.

J. W. CARR, M.A., F.L.S.,

Professor of Biology in University College, Nottingham.

[In the 26th Song of Drayton's Poem the 'Poly-Olbion,' published in 1622, reference is made to the fishes then known to occur in the Trent near Nottingham, and as this enumeration constitutes, as far as I can learn, the earliest record of Nottinghamshire fishes, it is perhaps of sufficient interest to reproduce here, together with notes on the present occurrence of the species mentioned. In spite of the enormous growth of the city since Drayton wrote, and the pouring into the river of great volumes of foul water from the numerous dyeing, bleaching, tanning, and other works, as well as the effluent from the sewage farm, the fish-fauna seems to have undergone comparatively little change during the interval of 275 years since the publication of the 'Poly-Olbion.']

SONG XXVI.

In her peculiar praise, lo thus the River sings:

What should I care at all from what my name I take,
That *Thirty* doth import, that thirty rivers make
My greatness what it is, or thirty abbeys great,
That on my fruitful banks times formerly did seat:
Or thirty kinds of fish, that in my streams do live,
To me this name of *Trent* did from that number give.

. . . . . .

And of the British Floods, though but the third I be,
Yet *Thames* and *Severne* both in this come short of me,
For that I am the Mere of England, that divides
The North part from the South, on my so either sides,
That reckoning how these tracts in compass be extent,
Men bound them on the North, or on the South of *Trent*:
Their banks are barren sands, if but compar'd with mine,
Through my perspicuous breast the pearly pebbles shine;
I throw my crystal arms along the flow'ry valleys,
Which lying sleek and smooth as any garden-alleys,
Do give me leave to play, whilst they do court my stream,
And crown my winding banks with many an anadem:
My silver scaléd skuls [1] about my streams do sweep,
Now in the shallow fords, now in the falling deep:

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[1] Skul, skull, or scull: all used for 'school' or 'shoal,' and all derived from Anglo-Saxon *scoln*, which meant both a 'school' and a 'multitude.'

So that of every kind, the new-spawn'd numerous fry
Seem in me as the sands that on my shore do lie.
The **Barbell,**[1] than which fish a braver doth not swim,
Nor greater for the ford within my spacious brim,
Nor (newly taken) more the curious taste doth please;
The **Greling,**[2] whose great spawn is big as any pease;
The **Pearch**[3] with pricking fins, against the **Pike**[4] prepar'd,
As Nature had thereon bestow'd this stronger guard
His daintiness to keep (each curious palate's proof)
From his vile ravenous foe: next him I name the **Ruffe,**[5]
His very near ally, and both for scale and fin,
In taste, and for his bait (indeed) his next of kin;
The pretty slender **Dare**, of many call'd the **Dace,**[6]
Within my liquid glass, when Phœbus looks his face,
Oft swiftly as he swims his silver belly shows,
But with such nimble sleight that ere ye can disclose
His shape, out of your sight like lightning he is shot.
The **Trout**[7] by Nature mark'd with many a crimson spot,
As though she curious were in him above the rest,
And of fresh-water fish did note him for the best;

---

[1] **Barbel** (***Barbus vulgaris*** Flem.). Common in deep waters all along the course of the Trent, both above and below Nottingham. Specimens up to 10 lbs. in weight are frequently taken; the largest specimen in the Nottingham Museum weighed 10¾ lbs.

[2] **Grayling** (***Thymallus vulgaris*** Nilss.). Was, within twenty years ago, fairly common in one or two places near Nottingham, but is now very scarce. I heard of two specimens, of four or five ounces weight each, caught last year (1896). The only local specimen in the Nottingham Museum was taken from the Trent in Beeston Meadows about two years ago; it is just over ten inches in length.

[3] **Perch** (***Perca fluviatilis*** L.). Very common in all parts of the Trent. In the Nottingham Museum there is a local specimen which weighed 3½ lbs.

[4] **Pike** (***Esox lucius*** L.). Common in the Trent; the largest specimen in the Museum weighed 20 lbs.

[5] **Ruffe** (***Acerina cernua*** L.) One of the commonest fishes in the Trent.

[6] **Dace** (***Leuciscus vulgaris*** Flem.). Very common all along the Trent.

[7] **Trout** (***Salmo fario*** L.). Scarce in the Trent, but occurs about the spots where the small trout-streams enter the river. A local specimen in the Nottingham Museum scaled 3 lbs. 3 oz.

The **Roche** [1] whose common kind to every flood doth fall;
The **Chub** [2] (whose neater name), which some a **Chevin** call,
Food to the tyrant Pike (most being in his power),
Who for their numerous store he most doth them devour;
The lusty **Salmon** [3] then, from Neptune's wat'ry realm,
When as his season serves, stemming my tideful stream,
Then being in his kind, in me his pleasure takes,
(For whom the fisher then all other game forsakes)
Which bending of himself to th' fashion of a ring,
Above the forcéd wears himself doth nimbly fling,
And often when the net hath dragg'd him safe to land,
Is seen by natural force to 'scape his murderer's hand;
Whose grain doth rise in flakes, with fatness interlarded,
Of many a liquorish lip that highly is regarded.
And Humber, to whose waste I pay my wat'ry store,
Me of her **Sturgeons** [4] sends, that I thereby the more
Should have my beauties grac'd with something from him sent:
Not Ancum's silvered **Eel** [5] exceedeth that of Trent;
Though the sweet-smelling **Smelt** [6] be more in *Thames* than me,
The **Lamprey** [7] and his **less** [8] in *Severne* general be;

---

[1] **Roach** (***Leuciscus rutilus*** L.). Abundant; the best Nottingham specimen in the Museum weighed, when in the flesh, 1 lb. 10½ oz.

[2] **Chub** (***Leuciscus cephalus*** L.). Very common in the Trent: fine specimens, weighing five to six pounds, are not infrequent.

[3] **Salmon** (***Salmo salar*** L.). Occurs every year in many parts of the river, both above and below Nottingham, but not very commonly.

[4] **Sturgeon** (***Acipenser sturio*** L.). Very rare in the Trent, and has not, I believe, been seen near Nottingham for many years. The last one that I can hear of was taken at Clifton, some few miles above the city. This is a curious coincidence, as there is an old popular belief that the presence of one of these fish in the Trent above Nottingham presages the death of some member of the ancient Clifton family, whose mansion stands on the right bank of the river. On June 10th, 1884, a fine Sturgeon was captured at Muskham, near Newark, in the salmon nets; it was eight feet long, and weighed 16 stones ('Field,' June 14th, 1884).

[5] **Eel** (***Anguilla vulgaris*** Flem.). Very common in the river, and grows to a large size.

[6] I have no knowledge of the **Smelt** (***Osmerus eperlanus*** L.) as a Trent fish, and doubt if it has ever been taken in the county.

[7] **Lamprey** (***Petromyzon marinus*** L.). Occurs in the Trent, but not commonly; a fine specimen caught in the river at Fiskerton, about a year ago, is now in the Nottingham Museum.

[8] This refers to the **Lampern** (***Petromyzon fluviatilis*** L.), which was once very abundant in the Trent, and is still common.

The **Flounder**[1] smooth and flat, in other rivers caught,
Perhaps in greater store, yet better are not thought:
The dainty **Gudgeon,**[2] **Loche,**[3] the **Minnow,**[4] and the **Bleake,**[5]
Since they but little are, I little need to speak
Of them, nor doth it fit me much of those to reck,
Which everywhere are found in every little beck;
Nor of the **Crayfish**[6] here, which creeps amongst my stones,
From all the rest alone, whose shell is all his bones:
For **Carpe,**[7] the **Tench,**[8] and **Breame,**[9] my other store among,
To lakes and standing pools that chiefly do belong,
Here scouring in my fords, feed in my waters clear,
Are muddy fish in ponds to that which they are here.

From *Nottingham,* near which this River first begun
This song, she the meanwhile, by *Newarke* having run,
Receiving little *Snyte,*[10] from *Bever's* batning grounds,
At *Gaynsborough* goes out, where the *Lincolnian* bounds.

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[1] **Flounder** (***Pleuronectes flesus*** L.). Common in the Trent below Newark.

[2] **Gudgeon** (***Gobio fluviatilis*** Flem.).

[3] **Loach** (***Nemachilus barbatulus*** L.).

[4] **Minnow** (***Leuciscus phoxinus*** L.).

[5] **Bleak** (***Alburnus lucidus*** Häck.), known on the Trent as the Whitling.

These four are all common Trent fishes.

[6] **Crayfish** (***Astacus fluviatilis*** L.). I know nothing of this crustacean as a Trent species; it is abundant in the Dove, a tributary of the Derbyshire Derwent, which latter pours its waters into the Trent.

[7] **Carp** (***Cyprinus carpio*** L.). Occurs, but is not common in the Trent, preferring ponds and still waters, in which situations it is fairly common.

[8] **Tench** (***Tinca vulgaris*** Cuv.). The same remark applies.

[9] **Bream** (***Abramis brama*** L.). Very common in the Trent: a specimen in the Nottingham Museum weighed 6¾ lbs. The **White** or **Silver Bream** (***A. blicca*** Bloch) is also common.

[10] *The Smite*, which drains the Vale of Belvoir.

NOTE—ORNITHOLOGY.

Hen Harrier on the Borders.—On the 10th inst. a female Hen Harrier (*Circus cyaneus* L.), in the characteristic *ring-tail* plumage, flew past my brother and myself, near Murton White House, about three miles south of Berwick. Twenty years ago we used to see these fine birds almost every winter upon our Northumbrian moors, but now they are all but extirpated, and this is the only example I have seen alive for several years back. It is interesting to note that in a letter I have just received from my friend, Dr. Charles Stuart, of Chirnside, he writes that 'a Hen Harrier was shot at lately near Billie Mere (in Berwickshire) but was too far off. It got a round from the guns of a shooting party, but escaped.'—GEORGE BOLAM, Berwick-on-Tweed, 13th January 1898.

Naturalist,

THE CONSTITUENTS OF THE NORTH LANCASHIRE FLORA, 1597(?)-1893.

LISTER PETTY,
Ulverston.

FIFTEENTH PAPER.

Castanea sativa Mill. Clarke's First Record, 1551.

1864. Linton, Lake Country, 329—as *C. vulgaris* Lam. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Large tree on bank of river Crake, near the mill; two trees seen in Yewdale. **1885.** Baker's Flora, 187. Furness Abbey and Miss Hodgson repeated.

Fagus sylvatica L. C.F.R., 1548.

1864. Linton, Lake Country, 329. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. No locality.

Salix pentandra L. C.F.R., 1641.

1874. J. of B., Miss E. Hodgson. Occasionally, from Isle of Walney to Dunnerdale Fells.

Salix fragilis L. C.F.R., 1660.

1874. J. of B., Miss E. Hodgson. Foxfield; Colton Beck Bridge; side of Yewdale Beck; fine trees near Greenodd.

VAR. ***decipiens*** Hoffm.

1885. Baker's Flora, 188. Near Foxfield railway junction, Rev. A. Ley.

NOTE.—This, I fear, has been seen within the station property; planted if so.

Salix alba L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. High Tilberthwaite; Hill Top field, Ulverston.

Salix triandra L. C.F.R., 1670.

1892. J. of B. In roadside hedge near Humphrey Head, L. P.

Salix purpurea L. C.F.R., 1660.

1874. J. of B., Miss E. Hodgson. By canal feeder, Ulverston. **1885.** Baker's Flora, 189. Miss Hodgson repeated. By a stream a little out of Hawkshead on the road to Ambleside, J. G. Baker.

Salix viminalis L. C.F.R., 1632.

1874. J. of B., Miss E. Hodgson. The common hedge-row willow.

Salix Smithiana Willd.

1874. J. of B., Miss E. Hodgson. Newlands Vale; Lishmans Lane, Ulverston; and by the canal feeder. **1885.** Baker's Flora, 190. Ascending from the shore level at Ulverston to 300 yards over Coniston, J. G. Baker.

VAR. ***rugosa*** Sm.

1874. J. of B. Miss E. Hodgson includes this from Lawyer's Wood, Ulverston. But I do not know what it is. Does it equal *S. rugosa* Leefe?

Salix cinerea L. C.F.R., 1804.

1874. J. of B., Miss E. Hodgson. 'This, with its three varieties, is very common from the Isle of Walney to the north confines of Lancashire.'

Salix aurita L. C.F.R., 1724.

1874. J. of B., Miss E. Hodgson. Hedge-rows on the higher grounds.

Salix Caprea L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. As common as *S. cinerea*.

Salix repens L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Isle of Walney, frequent; Greenscow, Mrs. J. K. Hodgson. **1885.** Baker's Flora, 191. Ascending from shore level on Walney Island.

Populus alba L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Graythwaite Woods.

Populus tremula L. C.F.R., 1538.

1874. J. of B., Miss E. Hodgson. A very old-looking, weather-beaten tree on Plumpton peat moss.

Populus nigra L.

1864. Linton, Lake Country, 329. Almost everywhere. **1874.** J. of B., Miss E. Hodgson. Plumpton peat mosses.

Empetrum nigrum L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Kirkby Moor. [**1666.** Merrett, Pinax, 36. Plentiful in Lancashire and Yorkshire.]

Juniperus communis L. C.F.R., 1548.

1830. Otley, Guide, ed. iv., 144. Most plentiful on the pastures between Windermere and Coniston; and repeated in all subsequent editions. **1842.** Evans, Furness and Furness Abbey, 26. On the unenclosed fells. **1861.** Phytologist, 237. Top of the western edge of Humphrey Head, C. J. Ashfield.

1864. Linton, Lake Country, 329. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Moors and hills, frequent. **1885.** Baker's Flora, 192. Ascending from Humphrey Head.

Juniperus nana Willd. C.F.R., 1670.

1843. Jopling, Furness and Cartmel, 270. On the waste lands in north-east of High Furness, Aiton. Near Holker, W. Wilson. **1874.** J. of B., Miss E. Hodgson. Top of Humphrey Head. Dobby Shaw, Dunnerdale Fells.

Taxus baccata L. C.F.R., 1538.

1796. Withering, ed. iii., 615. On the mountain called Yewbarrow, clearly in its indigenous state, and in several other inaccessible places on the mountains of the Furness Fells, Atkinson; and repeated in all subsequent editions. **1830.** Otley, Guide, ed. iv., 140. Humphrey Head; and repeated in subsequent editions. **1832.** Loudon, Gard. Mag., 229. On road between the Ferry and Hawkshead, on the mountains, J. Major. **1837.** Baxter, Phænog. Bot., iii. Atkinson repeated. **1842.** Evans, Furness and Furness Abbey, 26. Amongst the rocks. **1861.** Phytologist, 237. West side of Humphrey Head, C. J. Ashfield, and same journal **1862.** Dr. Windsor repeats this. **1864.** Linton, Lake Country, 329. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. In the old woods of Plumpton and Roudsey. **1885.** Baker's Flora, 193. Ascending from shore level at Humphrey Head. Yewdale, north of Coniston. Mentions many places named after it, Yewdale Crag, Coniston, and Yewbarrow, near Grange. **1890** and **1892.** Atkinson's Guide to Grange. **1892.** Haviland, Distrib. Disease. Yewdale.

Pinus sylvestris L. C.F.R., 1640.

1864. Linton, Lake Country, 329. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Plantations.

Spruce and **Larch** are included by Linton as common, and no localities are given. Larch certainly seeds, and they produce young plants in some quantity in North Lancashire, and possibly some of the solitary trees may have so originated. Baker says: 'Planted from sea level to 500-600 yards.' Always, of course, an alien with us.

Elodea canadensis Mich. C.F.R., 1847.

1874. J. of B., Miss E. Hodgson. Foot of Windermere at Newby Bridge, entangled with *Ranunculus peltatus*. **1885.** Baker's Flora, 204. Alien, now established . . . in Windermere.

Malaxis paludosa Sw. C.F.R., 1640.

1796. Withering, ed. iii., 39-40. Between Rusland Chapel and Thwaite Moss, Jackson; and repeated in all succeeding editions; and in **1805,** Turner and Dillwyn, Bot. Guide, ii., 372. **1835.** Watson, New Bot. Guide, 302, on authority of Bot. Guide. **1840.** Baxter, Phænog. Bot., v., 394. **1885.** Baker's Flora, 198.

Neottia Nidus-avis Rich. C.F.R., 1597.

1796. Withering, ed. iii., as *Ophrys.* Not uncommon about Newton-in-Cartmel, I. Hall; and repeated in all following editions; and in **1805,** Turner and Dillwyn, Bot. Guide, ii., 372. **1840.** Baxter, Phænog. Bot., v., 357. Hall repeated, but ascribed to Bot. Guide. **1843.** Jopling, Furness and Cartmel, 271. Roudsey Wood, Wilson. **1864.** Linton, Lake Country, 329. Coniston. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Wilson's locality repeated. **1885.** Baker's Flora, 194. Hall, Linton, and Wilson repeated.

Listera cordata R. Br. C.F.R., 1666.

1843. Jopling, Furness and Cartmel, 271. Found occasionally among the hills in High Furness, Aiton. **1864.** Linton, Lake Country, 329. One place only, on Coniston Fell; and this repeated in **1885.** Baker's Flora, 194.

NOTE.—The record 'Lancashire,' in so many books from Ray's time onward, refers to the old station on Pendle Hill.

Listera ovata R. Br. C.F.R., 1548.

1843. Jopling, Furness and Cartmel, 271. About Conishead Priory, and frequent in thickets, Aiton. **1864.** Linton, Lake Country, 329. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. No locality.

Spiranthes autumnalis Rich. C.F.R., 1548.

1796. Withering, ed. iii., 33-4, *Ophrys.* In the limestone pastures about Newton-in-Cartmel, I. Hall; and in all subsequent editions. **1869.** Aspland's Guide, as *Neottia.* Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Limestone common near Baycliff, Rev. R. Rolleston. **1885.** Baker's Flora, 193. Hall and Rolleston repeated; near Grange-over-Sands, T. Gough; field by the road out of Kent's Bank, going towards Grange, J. G. Baker. **1892.** Haviland, Distrib. Disease, 380. No locality. **1892.** Atkinson's Guide to Grange. Included on authority of Baker's locality, and an unpublished one of my own.

Cephalanthera ensifolia Rich. C.F.R., 1666.

1843. Jopling, Furness and Cartmel, 271, as *Epipactis.* Old Park Wood, near to Copsehead rocks, Wilson. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1885.** Baker's Flora, 195. Wilson repeated. On Yewbarrow, over Grange-over-Sands, J. Sidebotham; T. Gough. **1892.** Haviland, Distrib. Disease, 380. No locality.

[***Cephalanthera pallens*** Rich., as *Epipactis grandiflora* Sm., was included in the list in Jopling, **1843**, but without any locality.]

Epipactis latifolia All. C.F.R., 1562.

1869. Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., 370. Blawith, Rev. W. M. Hind. **1885.** Baker's Flora, 194. Shore of Coniston Water, J. G. Baker. **1892.** Atkinson's Guide to Grange, included on an unpublished locality.

Epipactis palustris Crantz. C.F.R., 1660.

1885. Baker's Flora, 195. Once seen near the lake at Coniston, Miss S. Beever. Grange-over-Sands, I. Hindson; W. Foggitt.

Orchis pyramidalis L. C.F.R., 1660.

1869. Aspland's Guide. Within six miles of Grange, A. Mason. **1892.** Naturalist, 81. Near Cark, W. Duckworth.

Orchis morio L. C.F.R., 1597.

1869. Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 195. Plumpton meadows, and a meadow at Old Hall, Ulverston, Miss Hodgson.

Orchis mascula L. C.F.R., 1562.

1864. Linton, Lake Country, 329. 'Common,' no locality. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality.

Orchis latifolia L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 196. Meadows at Cark and Cartmel, C. Bailey.

Orchis maculata L. C.F.R., 1597.

1843. Jopling, Furness and Cartmel, 271. Frequent in the thickets and meadows, Aiton and Wilson. **1861.** Phytologist, 259. With white flowers on Humphrey Head, Dr. Windsor. **1864.** Linton, Lake Country, 329. 'Common,' no locality.

1869. Aspland's Guide. Within six miles of Grange, A. Mason.
1874. J. of B., Miss E. Hodgson. No locality.

Ophrys muscifera Huds. C.F.R., 1597.

1796. Withering, ed. iii., 37-8. Plumpton Woods, near Ulverston, Atkinson; and repeated in subsequent editions. **1805.** West, Antiq., ed. Close, 378. On the Hagg Hills near Dalton, Atkinson. **1805.** Turner and Dillwyn, Bot. Guide, ii., 372. Atkinson's first locality repeated on the authority of Woodward. But why? Woodward was in this district in 1781, and his record only appears in **1812**, Withering, ed. v., p. 37, after Atkinson's. There is no explanation to be got now. **1835.** Watson, New Bot. Guide, i., 302. 'In Plumpton Woods near Ulverston, B. G.' 'Is this correct?' **1842.** Evans, Furness and Furness Abbey, 26. Atkinson repeated. **1843.** Jopling, Furness and Cartmel, 272. Atkinson and Woodward's locality repeated; Roudsey Wood, W. Wilson; and repeated in **1861** (dated **1855**), Martineau's Guide, 187. **1864.** Linton, Lake Country, 329. Near Newby Bridge. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 198. Atkinson, Woodward, and Wilson repeated; Wilson apparently confirmed by Miss Hodgson. **1892.** Haviland, Distrib. Disease, 380. No locality.

NOTE. *Now* the Roudsey Wood locality is guarded more strictly. Dozens of people, with baskets (and sometimes trowels too), invaded the woods, and, of course, asked no permission to take roots away, but did so. The owner objected, and rightly; yet some folks complain.

Herminium Monorchis R. Br. C.F.R., 1663.

1843. Jopling, Furness and Cartmel, 272. About Newby Bridge and Humphrey Head, scarce, W. Wilson.

Habenaria conopsea Benth. C.F.R., 1634.

1843. Jopling, Furness and Cartmel, 271. Old Park Wood, Holker, Wilson. **1857.** Phytologist, 257. Between Flookborough and Humphrey Head, Dr. Windsor. **1864.** Linton, Lake Country, 329. 'Common,' no locality. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 196. Frequent from the shore level at Holker.

Habenaria albida R. Br. C.F.R., 1670.

1842. Wordsworth, Scenery, 23. On the high ground, Coniston and Hawkshead, T. Gough. **1874.** J. of B., Miss E.

Hodgson. Newfield, Seathwaite; many places along the rocky banks of the Duddon. **1885.** Baker's Flora, 197. High marshy ground at Coniston, Miss S. Beever; and Miss Hodgson puts hers as 'Cockley Beck, and on the banks of the Duddon in many places about Seathwaite,' which is practically the same as in **1874.**

Habenaria viridis R. Br. C.F.R., 1650.

1843. Jopling, Furness and Cartmel, 272, as *Phalanthera v.* . Near Bigland Hall, Cartmel, Wilson. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality.

Habenaria bifolia R. Br. C.F.R., 1696.

1874. J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 197. Shores of Windermere.

Habenaria chlorantha Bab.

1864. Linton, Lake Country, 329. Not uncommon. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. The more usual form. **1885.** Baker's Flora, 197. Is the most frequent sub-species at the Lakes.

Cypripedium Calceolus L. C.F.R., 1640.

1843. Jopling, Furness and Cartmel, 272. Has been found in the north-west of High Furness, Aiton. **1869.** Eng. Bot., ed. iii., vol. 9, 136. Is said to have been found in North Furness, Lancashire.

Iris Pseudacorus L. C.F.R., 1548.

1843. Jopling, Furness and Cartmel, 271. Near Conishead Priory, Aiton; Reake Mosses, Cartmel, W. Wilson. **1864.** Linton, Lake Country, 329. 'Common,' no locality. **1869.** Bolton, Geol. Frag., 116. Urswick Tarn. **1874.** J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 199. Frequent from shore level in Furness.

Crocus vernus All.

1843. Jopling, Furness and Cartmel, 271. In a field at Dragley Beck; near Swarthmoor Hall, Aiton. **1874.** J. of B., Miss E. Hodgson. Covering whole meadows near old Halls. **1885.** Baker's Flora, 199. Aiton repeated. **1892.** Naturalist, 84. In a field near the hamlet of Mansriggs, pointed out to me as known for 25 years by the late James Atkinson, of Ulverston; fields about the Lund; fields about Springfield. This latter may

be the same as Mr. Duckworth's on p. 373 of the same vol. Near Swarthmoor Hall, as recorded by Aiton, W. Duckworth.

Narcissus Pseudo-narcissus L. C.F.R., 1548.

1709. Robinson, Nat. Hist. Westm. and Cumb., 93. 'The common wild daffodil with a white and pale-coloured flower. The latter . . . frequently observed to grow with the ordinary yellow, but the former gathered . . . near Ulverston,' Lawson. Robinson is here quoting a MS. of T. Lawson, and repeated **1724**, Ray, Syn., ed. iii., 371. **1763.** Martyn, Plant. Cantab., 61. **1843.** Jopling, Furness and Cartmel, 272. Plentiful in the woods and pastures. **1864.** Linton, Lake Country, 329. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Very abundant in many places. **1885.** Baker's Flora, 199. Aiton and Miss Hodgson repeated; High Thwaite, Coniston, in a field called Smallfield, Miss S. Beever. **1889.** Westm. Notebook, 153. Lawson's record repeated in J. A. Martindale's Early Westm. Pl. Rec.

Narcissus major L.

1843. Jopling, Furness and Cartmel, 272. Both single and double in woods and pastures. **1892.** Naturalist, 85. This species, and *Narcissus major fl. pl.* Curtis, naturalised in many of the old orchards in Furness, and but seldom escaping, L. P.

NOTE.—My specimens were seen by Mr. Baker.

Narcissus biflorus Curtis.

1874. J. of B., Miss Hodgson. Near old Halls. **1885.** Baker's Flora, 199. Miss Hodgson repeated; field by Coniston Lake near Torver, Miss S. Beever.

Narcissus poeticus fl. pl.

1892. Naturalist, 85. Thoroughly naturalised on the bank of a stream near Ashlack Hall; in a meadow near the Duddon, a few plants only, L. P.

Galanthus nivalis L. C.F.R., 1778.

1778. Robson, Flora, 140. In pomariis frequens . . . . Lancasteriensi. **1843.** Jopling, Furness and Cartmel, 272. Common in Furness, Aiton. **1874.** J. of B., Miss E. Hodgson. Near houses and old Halls. **1885.** Baker's Flora, 200. Miss Hodgson repeated. **1892.** Naturalist, 85. In a wood near Broughton Mills; a few plants in a field near Bortree Stile, near Ulverston, probably conveyed with rubbish from garden there, L. P.

PHOTOGRAPHIC ORNITHOLOGY.

British Birds' Nests | How, Where, and When to Find | and Identify them | By | **R. Kearton** | Author of "Birds' Nests, Eggs, and Egg Collecting" | Introduction by | R. Bowdler Sharpe, LL.D. | Illustrated from Photographs by | C. Kearton | of Nests, Eggs, Young, etc., in their Natural Situations | and Surroundings | Cassell and Company, Limited | London, Paris & Melbourne | 1895 | All rights reserved[.]

[Royal 8vo, xx+368 pages. Price 21s. net].

This beautiful work, with its 118 reproductions of photographs from nature, its 368 pages of letterpress, a preface of 10 pages full of pleasing personal reminiscences, and an introducton of 4 pages by Dr. Sharpe, of the British Museum, is one of the most delightful books which has been written on this special subject in Natural History.

Mr. Kearton says that the great feature of the book lies in the unique character of the pictures. In this respect he claims 'that it is the first practical attempt to illustrate a manual on the subject from photographs taken *in situ*.' Personally we think the charm of the book lies, not only in the reproductions of the photographs of birds' nests, which must be seen to be instantly admired, and about which we have not a word to say, except of unstinted praise, for the love of them grows on us the oftener we study them; but in the fascinating personality of the work, although references, and rightly so, are made to other writers.

The adventures of Mr. R. Kearton, the birds'-nest man, and his brother, Mr. C. Kearton, the photographer, are what the reader most eagerly follows, as their narratives of dangerous, wearisome, yet successful expeditions may make smoother in no small degree the path of him who would follow in their footsteps. To see a photograph of a bird's nest, which at once strikes the eye as having been difficult to procure, and almost before the mind has determined how it might be done, to have it answered by one who was there at its taking, cannot fail to be interesting reading, and a series of such must of necessity be attractive.

Every country boy has gone birds' nesting, and though he may not have seen one-twentieth of the birds' nests mentioned in this book, some he will know, even beyond its fullest description, for it is a concise dictionary of British Birds' Nests. Our mind suddenly dwells on our first Redpoll's nest, found in a wild-rose bush overhanging a dry ditch; we turn to 'Redpoll, Lesser,' and run our eye along the sections:—'*Description of Parent Birds*,' '*Situation and Locality*,' '*Materials*,' '*Eggs*,'

'*Time*,' '*Remarks*,' every bird being so summarised, and find that although wild-rose bush is not mentioned, yet 'bushes that fringe streams' hits the situation we found our nest in, and so of many

Nest and Eggs of Lapwing (*Vanellus vanellus*),

As photographed on the Westmorland Hills.

others we tried. To him, be he still a boy or grown to man's estate, who has gone birds' nesting, this work strongly appeals.

Though born in Leeds, the writer of this notice was taken when a child to live amidst fields and woods in the country. At an early age his father (John Crowther), a keen field-naturalist, taught him how to distinguish birds and find birds' nests. His mind goes lovingly back to those and later days of birds' nesting adventures. The run of a whole wood was his, as was, also, the freedom to wander over a great number of fields, some bordered with hedge-rows so tall that the Magpie and the Dove nested in them. He knew where the Owl built in a hollow tree, the Robin in a kettle beneath the elders, the Starlings under the Rooks' nests. He remembers how he lay hid in the tall grass to watch the Dunnock come creeping to its nest of four blue eggs, and how, in his eagerness to see them, he nearly crushed a Yellow-hammer's nest beneath his feet. He took the Kestrel from the tall fir tree, and the Starlings and Martins from the scarp of the quarry. Even the birds which nested over the river were not free from his quest, for, in the scantiest attire, he went up the river and climbed the hawthorn hedges—he felt no thorns then, he was too eager to rob the nests of the Chaffinch, Thrush, and kindred birds. He haunted the bushes of bramble and wild-rose which sheltered the Willow Wren, or crept along the rotten branch of the chestnut to get the Stormcock's nest, to fall, with bough and nest, some twenty feet or more, and remain insensible he knows not how long. He turns not a leaf of this delightful book, which deals with those birds and nests he knew in child-hood, without feeling the throb of those happy days again.

Mr. Kearton is a Yorkshireman, born in Muker, up in Swale-dale—many of us know it well—and in this work of his he has several illustrations from his own county and the moors of Westmorland, beyond his native village. With so many workers with the camera, ever on the look out for subjects, although to stamp the book with greater originality Messrs. Kearton have procured some photographs from situations which few would care to visit, we may congratulate ourselves that a Yorkshireman is the first in the field with a book of photographs of birds' nests. Few, perhaps, have better opportunities in this district of knowing many of the uses to which the camera is being put in the pursuit of natural science than the writer, and he fears the danger in the future will be in too little observation and too much illustration; there is, even in this book, the faintest suspicion of it, although

it is the product of two minds. The illustrations drawn from the county of York are disproportionately small; yet, probably, no other part of Britain can offer more varied aspects of bird life, and it is a pleasure to think that not only are books being published dealing with this subject in the county, but that we have also a great many workers with the camera.

Some time before Mr. Kearton published his book, the writer was photographing the eggs and nests of birds, and was also making a personal study of the nesting habits of Yorkshire birds. Amongst the best photographs he has seen is a series by the Rev. W. Travis Travis, of Ripley, of equal merit to those in Mr. Kearton's book; a pretty study of a Willow Wren amidst grass and daisies, a Garden Warbler in a surrounding of nettles and cleavers, a Kittiwake nesting on the Pinnacle Rocks at the Farnes, as seen through a tele-photo lens, and many others. But Mr. Travis is more ambitious than this, for he is photographing all the European Birds' Eggs and colouring them in such a manner that, should they ever be reproduced, ornithologists will possess a unique work. Mr. H. Bendelack Hewetson, of Leeds, has done some really excellent photographs of birds' nests on the Farnes, and of Terns at the Spurn, of unique interest. Two young naturalist friends of the writer's, Peel and Arthur Longbottom, sons of Mr. D. Longbottom, of Silsden, are doing some good moorland work. Before him is a batch of their photographs, a charming study of a Ring Ouzel in a whin bush, and another of a Willow Wren amidst the grass behind a bush of eglantine. The President of the Wakefield Naturalists' Society (Mr. George Parkin), has also sent some interesting photographs; one, a Moorhen's nest among reeds, conveys to the eye the nature of its nesting habits better than pages of letterpress. Mr. James Backhouse, of Harrogate, has shown the writer, amongst others, a particularly fine photograph of a Corncrake's nest in cut grass, and that of a Chaffinch in an ivy bush. He has also seen work done by Mr. A. Houghton, of Huddersfield, and Mr. F. W. Branson, of Leeds. In all these there is that delightful attractiveness met with in the book; it is due to the subject. There are no two nests alike, even of one species. All excite a love of country, sea, mountain, fell, plants, and birds.

To every lover of wild nature, even if birds' nests be not his special study, this book can be heartily recommended.

HENRY CROWTHER, F.R.M.S.

THE MUSEUM, LEEDS, *20th December 1897.*

LINCOLNSHIRE NATURALISTS AT LINWOOD WARREN.

REV. EDWARD ADRIAN WOODRUFFE-PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union; Curator of the Lincolnshire County Herbarium.

ON Thursday, September 30th, a meeting of the Union was held at Market Rasen, especially for studying the fungi of Linwood Warren and Wood, in Divison 7, permission having kindly been granted by Colonel Conway-Gordon.

Mr. W. Lewington, of Market Rasen, one of the most active lepidopterists in the Union, acted as local guide. The party included Mr. F. M. Burton, F.L.S., F.G.S., of Gainsborough, The Rev. Canon W. W. Fowler, M.A., F.L.S., F.E.S., of Lincoln, Rev. W. Fowler, M.A., of Liversedge, Mr. G. A. Grierson, F.L.S., Mr. G. M. Lowe, M.D., Mr. A. Fieldsend, Mr. F. H. Fowler, and Mr. J. S. Sneath, all of Lincoln, Mr. T. Gelsthorpe and Mr. R. W. Goulding, of Louth, and the organizing secretary.

The species of fungi found were submitted for determination to the Rev. W. Fowler, who freely placed his mycological knowledge at the service of the Union. He retained a few species for critical examination, but the following list of 54 species includes all that were certainly named.

Amanita rubescens.
Amanita muscaria.
Amanita vaginata.
Amanita phalloides.
Lepiota procera.
Armillaria mellea.
Tricholoma terreum.
Tricholoma rutilans.
Collybia velutipes.
Collybia butyracea.
Mycena ammoniaca.
Mycena galopoda.
Mycena pura.
Mycena galericulata.
Mycena polygramma.
Omphalia fibula.
Entoloma costatus.
Hebeloma fastibilis.
Galera tener.
Hypholoma fasciculare.
Hypholoma sublateritius.
Stropharia aeruginosa.
Stropharia semiglobata.
Psilocybe foenisecii.
Psilocybe spadicea.
Panæolus campanulatus.
Psathyrella atomata.
Coprinus atramentarius.
Coprinus plicatilis.
Coprinus micaceus.
Paxillus involutus.
Hygrophorus puniceus.
Hygrophorus ceraceus.
Hygrophorus niveus.
Hygrophorus virgineus.
Lactarius torminosus.
Lactarius vellerius.
Lactarius rufus.
Lactarius quietus.
Lactarius subdulcis.
Russula decolorans.
Russula ochroleuca.
Russula furcata.
Russula cyanoxantha.
Cantharellus aurantiacus.
Marasmius oreades.
Boletus scaber.
Boletus granulosus.
Stereum purpureum.
Calocera viscosa.
Tremella mesenterica.
Lycoperdon gemmatum.
Bulgaria sarcoides.
Xylaria hypoxylon.

Mr. J. S. Sneath noted the plants, in all 61 species. Nothing new to the Division or district was recorded, but on such well-worked ground nothing was likely to turn up. They have been added to the interminable botanical register.

The Green-veined White (*Pieris napi*), the Small Copper (*Chrysophanus phlœas*), and the Small Tortoise-shell (*Vanessa urticæ*) Butterflies were still on the wing, as was the Gold-tailed Moth (*Porthesia auriflua*).

This brings before us the Lepidoptera. During a residence of eleven years in the Market Rasen district, which implies a radius of five miles round the town, in Natural History Division 7, Mr. W. Lewington has devoted his attention to taking and setting up all the species of the neighbourhood. The subjoined list contains the best things taken during the period named by an enthusiast on ground which has been well described by the Rev. G. H. Raynor, a competent authority, as richer than the New Forest district. A full list could easily have been added, but as a register on the lines of the botanical and coleopteral registers is on the point of being started, 'The Naturalist' may expect a critical catalogue worked out on divisional lines before long.

Colias edusa, common in 1892.
Colias edusa var. helice, 1 in 1892.
Melitæa aurinia (artemis).
Apatura iris.
Melanargia galatea.
Pararge egeria.
Thecla betulæ.
Carterocephalus palæmon (paniscus).
Acherontia atropos.
Sphinx convolvuli.
Chœrocampa porcellus.
Macroglossa fuciformis.
Macroglossa bombyliformis.
Nola cucullatella.
Nola confusalis.
Lithosia deplana.
Nemeophila russula.
Spilosoma lubricipeda (very dark).
Dicranura furcula.
Dicranura bifida.
Pterostoma palpina.
Notodonta dictæoides.
Notodonta trepida.
Notodonta chaonia.
Notodonta trimacula.
Pygæra curtula.
Cymatophora or.
Cymatophora duplaris.
Acronycta tridens.
Acronycta leporina.
Acronycta alni.
Acronycta ligustri.
Calamia phragmitidis.
Tapinostola hellmanni.
Xylophasia scolopacina.
Neuria reticulata.
Luperina cespitis.
Apamea connexa.
Agrotis saucia.
Agrotis obscura (ravida).
Tæniocampa populeti.
Xanthia gilvago.
Cirrhœdia xerampelina.
Cosmia paleacea.
Hecatera serena.
Aplecta acculta.
Aplecta advena.
Asteroscopus sphinx (cassinea).
Plusia festucæ.
Erastria fasciana.
Phytometra viridaria.
Selenia lunaria.
Eugonia fuscantaria.
Boarmia roboraria.
Geometra papilionaria.
Zonosoma punctaria.
Asthena sylvata.
Acidalia imitaria.
Hybernia aurantiaria.
Cheimatobia boreata.
Eupithecia albipunctata.
Eucosmia certata.
Eucosmia undulata.

From sweepings taken over all the grounds and woods traversed, the Rev. A. Thornley, M.A., F.L.S., F.E.S., who was unavoidably absent giving his presidential address to the Nottingham Naturalists' Society, sends the following notes on the insects found.

The Coleoptera observed included *Chilocorus bipustulatus*, *Haltica pusilla*, *Adalia bipunctata* (a singular black variety which seems confined to heather), *Coccinella 7-punctata*, *C. 11-punctata*, *Hippodamia variegata*, *Calathus cisteloides*, *Harpalus æneus*, *Choleva cisteloides*, *Sitones griseus*, *Polydrusus pterygomalis*, *Aphodius contaminatus*, *A. inquinatus*, *Hypera variabilis*, and *Lochmæa suturalis*.

The Hemiptera-Heteroptera were *Acanthosoma dentatum*, *Lygus pratensis* and *Scolopostethus affinis*.

The only Hymenopteron was *Mellinus arvensis*.

The Orthoptera were *Stenobothrus parallelus* and *Tettix bipunctatus*.

This ground, which will well repay the entomologist interested in every department, is rich in woods and broken commons and scrub. Alluvium and river gravel follow the course of the Rase in an Oxford clay valley on the West of Rasen. Boulder clay stretches for miles on the south, covered by woods and open fields. The north and east are blown sands with various kinds of cover, with outcrops of the underlying Kimeridge clay occurring occasionally.

NOTES AND NEWS.

The International Congress of Zoology is this year to meet in Great Britain for the first time in its existence, and British zoologists are doing their utmost to render the gathering thoroughly successful, and worthy of the attendance of the numerous distinguished foreigners who are expected to visit Cambridge on the 23rd August. Sir John Lubbock is to be president, and a strong Committee in London is working at the arrangements.

It being difficult for Societies and Institutions in our Northern Counties to co-operate actively with a London Committee, we have therefore great pleasure in calling attention to a meeting which is to be held in Manchester, on the 16th of February, at 5 p.m., at the rooms of the Manchester Literary and Philosophical Society, 36, George Street.

The meeting is called at the instance of Mr. J. Cosmo Melvill, M.A. (whom we may congratulate on being appointed one of the Vice-Presidents of the General Committee), and Prof. Sydney J. Hickson, with the latter of whom, at Owens College, communication should be made by any Societies desirous to co-operate in assisting the London executive.

Mr. Melvill expressly desires us to intimate that representatives of all Natural History Societies in the North of England will be heartily welcomed, and to ask that Societies proposing to send representatives will at once address themselves to Prof. Hickson.

February 1898.

NOTES GEOLOGY.

Erratic Boulders in Lincolnshire. –I am glad to see Mr. Stather's remarks in the last number of 'The Naturalist.' No doubt it is chiefly near 'ports and waterways' that blocks of stone, brought through man's aid to the places where they are met with, are most likely to be found; for it is only in such places that vessels can discharge their cargoes; but such blocks, as he points out, are often carried far inland for various purposes. This remark applies also to some extent, if not equally, to railways; for, no doubt, wherever stations are built, there trucks, laden with blocks of stone, are frequently brought.

With regard to Mr Cooke's remarks in the same number, though I feel it is not necessary for me to say it, yet, as the question is put, I readily reply that if the Sutton rock remains, which I mentioned at the Annual Meeting of the Lincolnshire Naturalists' Union at Lincoln in October last, should turn out to have been brought there 'as ballast by the fishing boats,' or in any other way through man's aid, I shall of course admit that the record of them is of no value whatever. Surely what we want, and what we should aim at, as searchers in the field of science, is to get at the truth and nothing more; and, to this end, friendly criticisms are often useful.

I must decline saying more at present, as I am preparing a paper on the subject, which I hope to have ready before long.—F. M. Burton, Highfield, Gainsborough, 15th Jan. 1898.

Lincolnshire Boulders.—I think, with Mr. Burton and others, that much care should be used before we accept road and farmyard boulders as having been left in or near their present locality by ice. A large majority of the village boulders in the Marsh and Middle Marsh districts of Lincolnshire are in no sense of local origin, nor are they derived, as Mr. Cooke thinks, from the immediate neighbourhood and as the result of farming operations. Farmers in the olden times seldom went deep enough to touch a boulder in its original bed in the subsoil, and no brick pits and few gravel pits existed anywhere in North Lincolnshire. In more recent days when, in underdraining, a large erratic is struck, a slight divergence is invariably made in the drain, men objecting to the labour of digging it out.

Where then did our boulders come from? Local sources have never supplied a tithe of those in our low country villages, and we must remember that scores and hundreds have from time to time been broken up for roads. Originally these were brought in ships as ballast, and by degrees distributed through the district, being in the greatest demand, and in fact absolutely essential to the builder in the days of 'mud and stud' erections, partly to be used for the protection of exposed corners, but chiefly as a base for the principal wooden uprights the posts resting on the flattened surface of the stone, but never mortised into it. Many are also used as boundary-stones in the open fields.

Occasionally in cutting a drain or excavating foundations about this village, our men come across these base-stones, marking, perhaps, the ancient homestead of Saxon or Dane.

All the very ancient cobble causeways in North Lincolnshire villages appear to have been constructed of sea-borne materials. Certainly these stones are not local, picked off the land or collected on the coast, but have been brought from the Holderness shore and the great gravel banks the 'binks' eastward of the Spurn.

Is it not likely also that the majority of the Louth boulders have been partly water-carried from distant places, and are not altogether the product of the Hessle clay, flanking the Eastern Wolds. John Cordeaux, Great Cotes House, R.S.O., Lincoln, 12th January 1898.

NOTES AND NEWS.

Those who are interested in Mr. Ruskin's drawings of plants and trees, will find a beautiful one in the Christmas Number of the 'Architectural Review.' It is a 'budding sycamore – sketched at Greta Bridge, 1875.' Mr. Ruskin considers the reproduction 'admirably done.'

Naturalist.

LINCOLNSHIRE MOSSES:

BEING PART I OF NOTES FOR A FUTURE CRYPTOGAMIC FLORA OF LINCOLNSHIRE.

COMPILED BY J. LARDER,

Louth, Lincolnshire; Cryptogamic Secretary, Lincolnshire Naturalists' Union.

THE following list, compiled from the 'Locality Register' of the Lincolnshire Naturalists' Union, is the first of a series to show what records have been made in cryptogamic botany up to the present time. The last list published was that contained in White's Directory of the County, 1892, drawn up by Mr. F. Arnold Lees, M.R.C.S. As several additional 'locality records' since then, and some fresh records of species, have been added to the list, the publication of a complete list of the cryptogamia in a concise form will be found of use to those who are interested in this branch of botany. Those who have paid attention to this branch of botany are the following:—Mr. W. Allen, Miss S. Allett, Mr. A. Carr, Mr. B. Crow, Mr. J. B. Davy (who commenced the compilation of this county list), Rev. W. Fowler, M.A., Mr. F. A. Lees, M.R.C.S. (whose researches sixteen years ago supply material for the best half of the entire Moss list), Rev. W. W. Mason, Dr. H. F. Parsons, Rev. E. A. W. Peacock, Mr. H. W. Surtees, Rev. A. Thornley, Mr. E. Woodthorpe, and Mr. A. R. Yeoman, M.A. For the identification of those collected by myself, I am indebted to Mr. M. B. Slater, F.L.S., and Mr. J. J. Marshall. I hold what type specimens there are of the following list, with the exception of those (a large number) collected by Mr. Lees. These are in the hands of the Phanerogamic Secretary, Rev. E. A. W. Peacock.

Sphagnum acutifolium Ehr. Linwood Warren; F. A. Lees. Div. 7.

Sphagnum intermedium Hoffm. Twigmoor; Messrs. Peacock and Davy. Div. 2.

Sphagnum cuspidatum Ehr. Twigmoor; Messrs. Peacock and Davy. Div. 2.

Sphagnum cuspidatum var. ***plumosum*** Nees. Linwood Warren, peat holes; F. A. Lees. Div. 7.

Sphagnum eu-rigidum Schpr. Linwood Warren; F. A. Lees. Div. 7.

Sphagnum eu-rigidum var. ***compactum*** Brid. Linwood Warren; F. A. Lees. Div. 7.

Sphagnum subsecundum Nees. Whisby, Linwood. Divs. 7, 13.

Sphagnum papillosum Lind. Linwood Warren; F. A. Lees. Div. 7.

Sphagnum cymbifolium Ehr. Kirkby Moor, Twigmoor, Isle of Axholme; Peck, 1815. Osgodby Plantation Moor, near Rasen; F. A. Lees. Divs. 1, 2, 7, 10.

Sphagnum cymbifolium var. ***squarrosulum*** Nees. Twigmoor; Messrs. Peacock and Davy. Div. 2.

Gymnostomum microstomum Hedw. 'Hungry Spot,' Louth; J. Larder. Div. 8.

Weissia viridula Brid. Strubby, Elkington, Partney, and banks on Caistor Road, Rasen. Divs. 11, 8, 7.

Weissia cirrhata Hedw. Authorpe and Tealby. Divs. 8, 7.

Dicranella schreberi Hedw. Drain side near Marton Common; Rev. A. Thornley. Div. 5.

Dicranella cerviculata Hedw. Whitton; H. F. Parsons. Div. 2.

Dicranella varia Hedw. Tathwell, Louth, and Rasen districts. Divs. 7, 8.

Dicranella heteromalla Hedw. Tothill, Elkington, Strubby, Twigmoor, Hallington, Spilsby, and woods about Rasen. Divs. 2, 7, 8, 11.

Dicranum scoparium L. var. ***paludosum*** Schpr. Lincs. N. No record of locality; F. A. Lees.

Dicranum majus Turn. Wooded bank near Linwood Warren; F. A. Lees. Div. 7.

Dicranum palustre Brid. Twigmoor; Messrs. Peacock and Davy. Div. 2.

Dicranum palustre Brid. var. ***rugifolium*** Bosw. By pool in fir wood, 1½ miles north of Rasen; also Linwood Warren; F. A. Lees. Div. 7.

Campylopus flexuosus Brid. Wood near Linwood Warren; F. A. Lees. Div. 7.

Campylopus fragilis (B.&S.). Bank of Wood, Usselby, and Caistor Road near Market Rasen; F. A. Lees. Div. 7.

Campylopus pyriformis Brid. Bank of Firwood, Usselby; F. A. Lees. Div. 7.

Leucobryum glaucum Linn. Kirkby Moor, Twigmoor and Linwood. Divs. 2, 7, 11.

Seligeria pusilla Hedw. Near Louth, 1892; J. Larder. Div. 8.

Phascum cuspidatum Schreb. On sandy ground on Crosby Warren, growing with *Barbula unguiculata*; Rev. W. Fowler. Div. 2.

Pottia minutula Schwg. Near Louth; J. Larder. Div. 8.

Pottia cavifolia Ehr. Kirton-Lindsey and Louth. Divs. 5, 8.

Pottia truncata L. Woodhill, Rasen; F. A. Lees. Div. 7.

Pottia intermedia Turn. Near Louth and Woodhill, Rasen. Divs. 7, 8.

Pottia pusilla Hedw. Burton-le-Coggles and Welbourn; Rev. W. W. Mason. Divs. 15, 13.

Pottia heimii Hedw. Sea bank, Cleethorpes; A. Carr. Div. 4.

Pottia lanceolata Dicks. Mablethorpe Sand-hills; J. Larder. Div. 9.

Didymodon rubellus B.&S. Louth, Hallington, Tealby, and Haxey. Divs. 8, 7, 1.

Ditrichum flexicaule Schwg. Dry stony limestone ground, Santon Warren; H. F. Parsons. Reed's Quarry, Broughton; F. A. Lees. Div. 2.

Trichostomum tophaceum Brid. Brickyard, Mablethorpe; J. Larder. Div. 9.

Barbula ambigua B.&S. Broughton; Rev. W. Fowler. Div. 2.

Barbula aloides Koch. Broughton; Rev. W. Fowler. Div. 2.

Barbula muralis L. Everywhere. Mablethorpe, Grantham, Rasen, Dorrington, Burton-le-Coggles, Old Leake, and Welbourn. Divs. 7, 9, 12, 13, 14, 15.

Barbula unguiculata Dill. Crosby Warren; Rev. W. Fowler. Strubby, Tathwell, Hallington, Elkington, Woodhill (Rasen). Divs. 2, 7, 8.

Barbula fallax Hedw. Roadsides, Rasen; F. A. Lees. Div. 7.

Barbula rigidula Dicks. Garthorpe; H. F. Parsons. Div. 2.

Barbula hornschuchii Schultz. Marton, Dorrington. Divs. 6, 14.

Barbula revoluta Schwg. Dorrington; Rev. W. W. Mason. Div. 14.

Barbula convoluta Hedw. Turf-pits, Haxey; Rev. W. Fowler. Div. 1.

Barbula tortuosa L. Reed's quarry, Broughton; Rev. W. Fowler. Div. 2.

Barbula subulata L. South Willingham, and sandy banks near Rasen. Div. 7.

Barbula lævipila Brid. Raithby, near Louth, and Old Leake. Divs. 8, 12.

Barbula ruralis L. Mablethorpe sandhills, Scamblesby, bank near Rasen and Dorrington. Divs. 7, 8, 9, 14.

Barbula ruralis var. ***arenaria.*** Sandhills, Theddlethorpe; Rev. A. Thornley. Div. 9.

Barbula intermedia Brid. Garthorpe, Claxby Wood. Divs. 1, 7.

Ceratodon purpureus L. Mablethorpe sandhills, Benniworth, heaths near Rasen, and Dorrington. Divs. 9, 7, 14.

Encalypta vulgaris Hedw. Goulceby and Crosby Warren. Divs. 8, 2.

Encalypta streptocarpa Hedw. Old quarry near 'The Reeds,' Broughton; Rev. W. Fowler. Div. 2.

Grimmia apocarpa L. Claxby, Broughton, and Burton-le-Coggles. Divs. 7, 2, 15.

Grimmia pulvinata Dill. Cawthorpe, Hallington, Claxby, Dorrington and Welbourn. Divs. 8, 7, 14, 13.

Grimmia trichophylla Grev. Near Broughton Wood; Rev. W. Fowler. Div. 2.

Rhacomitrium canescens Hedw. Risby and Santon Warrens; Rev. W. Fowler. Div. 2.

Rhacomitrium canescens var. ***ericoides*** Bry.Eur. Lincs. North. No record of locality; F. A. Lees.

Zygodon viridissimus Dicks. Lincs. North. No record of locality; F. A. Lees.

Ulota crispa Hedw. Wickenby Holt; F. A. Lees. Div. 7.

Ulota intermedia Schpr. Small ash boles, Legsby Wood; F. A. Lees. Div. 7.

Orthotrichum saxatile Brid. Claxby; F. A. Lees. Div. 7.

Orthotrichum affine Schrad. In valley below Stainton-le-Vale; F. A. Lees. Div. 4.

Orthotrichum stramineum Hornsch. Lincs. North. No record of locality; F. A. Lees.

Orthotrichum diaphanum Schrad. Near Louth; J. Larder. Div. 8.

Physcomitrium pyriforme L. Louth and Rasen. Divs. 8, 7.

Funaria hygrometrica L. Louth, Authorpe, Scamblesby, Sutton-on-Sea, Rasen and Old Leake. Divs. 8, 11, 7, 12.

Bartramia pomiformis L. Legsby and Salmonby. Divs. 7, 10.

Philonotis fontana L. Isle of Axholme; Peck, 1815; and Wrawby Moor. Divs. 1, 2.

Breutelia arcuata Dicks. Linwood Warren, amongst *Sphagnum rigidum*; F. A. Lees. [1878 and '9. A relic of a montane flora like the *Lycopodium alpinum* observed near Frodingham by Rev. Wm. Fowler—now both gone for ever. F.A.L.] Div. 7.

Leptobryum pyriforme L. Halton Holgate; J. Larder. Div. 11.

Webera nutans Schreb. Linwood Warren; F. A. Lees. Div. 7.

Webera annotina Hedw. Twigmoor; Messrs. Peacock and Davy. Div. 2.

Webera carnea L. No record of locality. F. A. Lees.
Webera albicans Wahl. Santon Warren; H. F. Parsons. Div. 2.
Bryum paludosum L. Isle of Axholme; Peck. Div. 1.
Bryum nutans Schreb. Twigmoor; Peacock and Davy. Div. 2.
Bryum pendulum Hornsch. Louth; J. Larder. Div. 8.
Bryum erythrocarpum Schwg. Linwood; F. A. Lees. Div. 7.
Bryum cæspiticium L. Isle of Axholme, Claxby Wood top, and Old Leake. Divs. 1, 7, 12.
Bryum argenteum L. Near Grantham, Louth, Authorpe, Partney and Garthorpe. Divs. 15, 8, 11, 1.
Bryum capillare L. Claxby, Burton-le-Coggles. Divs. 7, 15.
Bryum pallens Swartz. The Turfery, Haxey; H. F. Parsons. Div. 1.
Bryum pseudotriquetrum Hedw. Ditch near Saxilby; Rev. W. Fowler. Div. 6.
Mnium cuspidatum Hedw. Near Grantham; H. W. Surtees. Div. 15.
Mnium affine Bland. Near Marton; Rev. A. Thornley. Div. 6.
Mnium undulatum Hedw. Tothill, Louth, Twigmoor, Hallington, Authorpe, North Kelsey near Rasen, and Ferriby Cliff. Divs. 11, 8, 2, 3.
Mnium rostratum Schrad. Tothill and Rasen. Divs. 11, 7.
Mnium fontanum L. Isle of Axholme; Peck. Div. 1.
Mnium hornum L. Twigmoor, Tothill, and Rasen. Divs. 2, 11, 7.
Mnium serratum Schrad. Alford and Tealby. Divs. 11, 7.
Mnium punctatum Hedw. Rasen; F. A. Lees. Div. 7.
Aulacomnium androgynum L. Tealby; F. A. Lees. Div. 7.
Aulacomnium palustre L. Linwood Warren, Isle of Axholme, and Crosby Warren. Divs. 2, 1, 7.
Aulacomnium palustre var. ***imbricatum***. East Butterwick and Twigmoor. Div. 2.
Tetraphis pellucida L. Near Louth and near Rasen. Divs. 7, 8.
Atrichum undulatum L. Tothill, Elkington, Hallington, Tathwell, Spilsby, Strubby, Rasen, Cawthorpe. Divs. 11, 8, 7.
Pogonatum aloides Hedw. Near Rasen; F. A. Lees. Div. 7.
Pogonatum urnigerum L. Near Rasen; F. A. Lees and W. Allen. Div. 7.
Polytrichum formosum Hedw. East Butterwick; Rev. E. A. W. Peacock. Div. 2.
Polytrichum piliferum Schreb. Linwood Warren; F. A. Lees. Div. 7.

Polytrichum juniperinum Hedw. Near Bag Enderby, Scotton Common, and Rasen. Divs. 10, 5, 7.

Polytrichum commune L. Isle of Axholme, Twigmoor, Tothill, and Linwood Warren. Divs. 1, 2, 11, 7.

Fissidens bryoides Hedw. Tothill, Elkington, Tathwell, near Spilsby, Louth, and Woodhill, Rasen. Divs. 11, 8, 7.

Fissidens adiantoides Hedw. Broughton; Rev. W. Fowler. Div. 2.

Fissidens taxifolius L. Elkington, Strubby, Tathwell, and Rasen. Divs. 8, 7.

Cinclidotus fontinaloides Hedw. Tealby; F. A. Lees. Div. 7.

Fontinalis antipyretica L. Farlsthorpe, Hubbard's Valley, Louth, Belleau, Wainfleet, Bishopsbridge near Grantham, Bourn, Cawthorpe Wood, and near Kenwick Wood. Divs. 11, 8, 12, 15, 16.

Cryphæa heteromalla Hedw. Broughton Wood; Rev. W. Fowler. Div. 2.

Leucodon sciuroides L. Claxby Wood, Broughton. Divs. 7, 2.

Neckera crispa L. Broughton; Rev. W. Fowler. Div. 2.

Neckera complanata L. Tothill, Claxby, Rasen district, and Burton-le-Coggles. Div. 11, 7, 15.

Homalia trichomanoides Schreb. Cadney, Elkington, Wickenby Holt, and Claxby Wood. Divs. 3, 8, 7.

Leskea polycarpa Ehr. Near Louth; J. Larder. Div. 8.

Anomodon viticulosus L. Stainton-le-Vale; F. A. Lees. Div. 4.

Thuidium tamariscinum Hedw. Tothill, Tathwell, Grantham district, Rasen district, Washingborough and Barrow Road. Divs. 11, 8, 15, 7, 13.

Thamnium alopecurum L. Tothill and Linwood. Divs. 11, 7.

Climacium dendroides L. Woodhill, Rasen; F. A. Lees. Div. 7.

Pylaisia polyantha Schreb. Near Louth; Bogg coll. Div. 8.

Isothecium myurum Poll. Linwood; F. A. Lees. Div. 7.

Homalothecium sericeum L. Grantham district, Claxby, Dorrington, Burton-le-Coggles, and Welbourn. Divs. 15, 7, 14, 15, 13.

Camptothecium lutescens Huds. Kirton Lindsey; F. A. Lees. Div. 5.

Brachythecium salebrosum Hoffm. Near Rasen, and Woodhill. Div. 7.

Brachythecium salebrosum Hoffm. var. ***mildeanum*** Schp. Sand-hills, Theddlethorpe; Rev. A. Thornley. Div. 9.

Brachythecium glareosum B.&S. Near Rasen; F. A. Lees. Div. 7.

Brachythecium albicans Neck. Santon Warren and Theddlethorpe Sand-hills. Divs. 2, 9.

Brachythecium velutinum L. Louth, Alford, and Woodhill, Rasen. Divs. 8, 11, 7.

Brachythecium rutabulum L. Louth, Strubby, Grantham and Rasen districts, Dorrington, and Old Leake. Cadney; E. A. W. Peacock. Divs. 8, 7, 15, 14, 12, 3.

Brachythecium purum. Cadney; E. A. W. Peacock. Div. 2.

Brachythecium populeum Hedw. Rasen; F. A. Lees. Div. 7.

Brachythecium plumosum Swartz. Rasen; F. A. Lees. Div. 7.

Eurhynchium myosuroides L. Tothill, Broughton Wood, and Stainton-le-Vale. Divs. 11, 2, 4.

Eurhynchium striatum Schreb. Tothill, Wickenby Holt, near Rasen, and Legsby Woods. Widely distributed in damp woodland; Wickenby, Legsby, Claxby; F.A.L. Divs. 11, 7.

Eurhynchium striatum var. ***arcuatum*** Lees (Rep. Bot. Record Club, Vol. 2, p. 92, 1880; *striatulum* Spruce of 1878 R.C. Rep.). Stump in Legsby Wood; F. A. Lees. Div. 7.

Eurhynchium crassinervium Tayl. Tealby; F. A. Lees. Div. 7.

Eurhynchium swartzii Turn. Kirkby Moor, and near Rasen. Div. 7.

Eurhynchium prælongum Dill. Tothill, Strubby, Fotherby, and Grantham district. Cadney; E. A. W. Peacock. Divs. 11, 8, 15, 2.

Rhyncostegium tenellum Dicks. Near Linwood; F. A. Lees. Div. 7.

Rhyncostegium confertum Dicks. Middle Rasen and Burton-le-Coggles. Divs. 7, 15.

Rhyncostegium megapolitanum Bland. Theddlethorpe; Rev. A. Thornley. Div. 9.

Rhyncostegium murale Hedw. Near Rasen; F. A. Lees. Div. 7.

Rhyncostegium rusciforme Weis. Near Louth and Bennisworth. Div. 8.

Plagiothecium borrerianum Spr. No record of locality; F.A.L.

Plagiothecium denticulatum L. Rasen district and Tathwell. Divs. 7, 8.

Plagiothecium elegans Hook. Tealby; F. A. Lees. Div. 7.

Plagiothecium sylvaticum L. Hundleby, Linwood. Divs. 10, 7.

Plagiothecium undulatum L. Twigmoor, and fir woods near Rasen. Divs. 2, 7.

Amblystegium serpens L. Tathwell, Rasen district, and Wellbourn. Divs. 8, 7, 13.

Amblystegium riparium L. Near Rasen; F. A. Lees. Div. 7.

Hypnum patientiæ Lindb. Twigmoor; Messrs. Peacock and Davy. Div. 2.

Hypnum aduncum Hedw. Woodhill, Rasen; F. A. Lees. Div. 7.

Hypnum lycopodioides Schwg. North Lincolnshire; F. A. Lees. No record of locality.

Hypnum fluitans L. Barnetby; F. A. Lees. Div. 3.

Hypnum filicinum L. Tathwell and Rasen district. Divs. 8, 7.

Hypnum commutatum Hedw. Broughton Wood and at Glentham; F. A. Lees. Divs. 2, 5.

Hypnum cupressiforme L. Well, Tathwell, Twigmoor, Tothill, Linwood Warren, Grantham district, and the woods about Rasen. Divs. 11, 8, 2, 7, 15.

Hypnum cupressiforme var. ***resupinatum*** Wils. Rasen; F. A. Lees. Div. 7.

Hypnum molluscum Hedw. Tothill and Claxby. Div. 11.

Hypnum chrysophyllum Brid. Broughton; Rev. W. Fowler. Div. 2.

Hypnum stellatum Schreb. Barnetby Junction; F. A. Lees. Div. 3.

Hypnum kneiffii Bry. Eur. Swamp, Woodhill; F. A. Lees. Div. 7.

Hypnum cordifolium Hedw. Laughton Low Warren; Rev. W. Fowler. Div. 5.

Hypnum cuspidatum L. Twigmoor, Tathwell, Woodhill and Louth. Divs. 2, 8, 7.

Hypnum schreberi Ehr. Rasen; F. A. Lees. Div. 7.

Hypnum purum L. Well, Tothill, Grantham district, and Osgodby plantation. Divs. 11, 15.

Hypnum scorpioides L. Scotton Common; Rev. W. Fowler. Div. 5.

Hylocomium splendens Dill. Hedw. Between Rasen and Tealby, and Well. Divs. 7, 11.

Hylocomium squarrosum Schpr. Tothill, Hallington, Twigmoor, Rasen and Grantham districts. Cadney; E. A. W. Peacock. Divs. 11, 8, 2, 7, 15.

Hylocomium loreum L. In one spot in fir wood on Walesby Road near Rasen, amongst *Polytrichum* and *Cetraria islandica*, dying out 1878; F. A. Lees. Div. 7.

Hylocomium triquetrum L. Tothill, Mablethorpe Sand-hills, and woods about Rasen. Divs. 11, 9, 7.

BIBLIOGRAPHY :

Papers and records published with respect to the Natural History and Physical Features of the North of England.

MAMMALIA, 1892.

The present instalment has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

Previous instalments of the Bibliography of this group of animals have appeared as follows :—

For 1884, in 'Naturalist,'	February	1885,	pp. 152-156.
,, 1885, ,,	August	1886,	pp. 239-241.
,, 1886-7, ,,	April	1889,	pp. 115-127.
,, 1888, ,,	Aug.-Sep.	1891,	pp. 253-259.
,, 1889-90-91, ,,	Feb.-Mar.	1893,	pp. 59-74.

As is our custom, the purely sporting and hunting notes which occupy so much space in 'The Field' and similar journals, find no place here, save in those exceptional instances which involve some natural history fact of value or interest.

The counties and vice-counties of which cognizance is taken in these references are the following, as named and numbered in the Watsonian scheme :—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Lake Lancashire; 70, Cumberland; and 71, Isle of Man.

ANON. [signed 'K. P. D. E.']. LINC. S.

Land set apart for Public Purposes [at Heckington; cottage and 4 acres left to defray expense of destroying *Talpa europæa* in the parish; quoted from W. Marratt's Hist. Lincs., Vol. 3, p. 226]. N. & Q., 8th March **1884,** p. 186.

ANON. [signed 'Sir Tatton']. FURNESS.

The Kendal Otter Hounds at Coniston [describing successful sport with *Lutra*, 19th June 1885]. Field, 27th June **1885,** p. 857.

ANON. [signed 'H. E.']. CUMBERLAND.

Netherby [gardens described; with note of *Lepus cuniculus*, and absence of *Sciurus*]. Gard. Chron., 19th July **1890,** p. 66.

ANON. [signed 'Edge']. YORK N.E.

Northern Notes. Weather Troubles, The Cleveland Hounds, and Ancient History. Land and Water, 3rd Jan. **1891,** p. 118.

ANON. [signed 'Plantagenet']. YORK N.W.

Hunts of the United Kingdom. The Earl of Zetland's Hounds [with double-page photograph; and history of the Hunt]. Land and Water, 14th Feb. **1891,** p. 197.

ANON. [signed 'Plantagenet']. LINC. N.

Hunts of the United Kingdom. The Earl of Yarborough's Hounds [at Brocklesby, with history of the Hunt and double-page photograph of the Pack]. Land and Water, 21st Feb. **1891**, p. 234.

ANON. [signed 'Buck']. YORK N.E.

A Yorkshire Deer Drive [at Bossall, after a deer (species not stated) escaped from Aldby Park]. Land and Water, 28th March **1891**, p. 383.

ANON. [signed 'B. W.']. CUMBERLAND.

The Carlisle Otter Hounds [in pursuit of *Lutra* on the lower Eden]. Land and Water, 6th June **1891**, p. 714.

ANON. [signed 'Belted Will']. CUMBERLAND.

The Carlisle Otter Hounds [in pursuit of *Lutra* on the Eden near Armathwaite]. Land and Water, 20th June **1891**, p. 771.

ANON. [not signed]. LINCS.

Threatened Rat Plague in Lincolnshire [*Mus decumanus* being in unusual numbers along the fen drains]. Land and Water, 26th Sept. **1891**, p. 370; rep. Field Club, Nov. 1891, p. 173.

ANON. [signed 'General']. CHEVIOTLAND.

A Tame Otter [(*Lutra lutra*) at Fawberry Tower, Northumberland]. Land and Water, 10th Oct. **1891**, p. 427.

ANON. [not signed]. LINCS., YORK N.W.

Notable Captures, etc. [A Daubenton's Bat (*Vespertilio daubentonii*) at Masham, Yorkshire; a Sperm Whale (*Physeter macrocephalus*), 13 ft. long, on the Lincolnshire coast]. Field Club, Nov. **1891**, p. 173.

ANON. [not signed]. CHESHIRE.

Capture of a Seal [? *Phoca vitulina*] at Hoylake [on 'Friday morning last,' details given]. Land and Water, 7th Nov. **1891**, p. 543.

ANON. [not signed]. YORK S.E., NOTTS.

Notable Captures, etc. [A Polecat (*Mustela putorius*) near Retford; a white Porpoise (*Phocæna communis*) off the Holderness coast]. The Field Club, Dec. **1891**, p. 187.

ANON. [not signed]. CHEVIOTLAND.

"Moses," a Pet Otter [(*Lutra lutra*) tamed by Mrs. Arthur Leather, of Fowberry Tower, Northumberland; details]. Land and Water, 23rd Jan. 1892, Supplement, p. xii.

ANON. [signed 'J. B.' and dated 'Durham']. DURHAM, CUMBERLAND.

Roedeer [*Cervus capreolus*] in co. Durham [noting one shot Jan. 9th in the north-west of the county, and repeating antiquarian information of some interest concerning both this species and *C. elaphus*, *Sus scrofa*, and *Canis lupus*; Editorial note supplements it, and also suggests that the one shot had wandered from where the species now exists in Cumberland, near Wigton]. Field, 30th Jan. 1892, p. 133.

ANON. [not signed]. LINC. N. AND S.

The Rat Plague in Lincolnshire [reported as diminishing]. Land and Water, 6th Feb. 1892, p. 160.

ANON. [signed 'Glendale']. CHEVIOTLAND.

Grey Hares [recording one of this var. of *Lepus timidus* killed at Fenton, in Northumberland, fourteen years ago; now stuffed]. Land and Water, 27th Feb. 1892, p. 221.

ANON. [not signed]. CHESHIRE.

Rat Pest in Cheshire [particularly at Delamere Forest; presumably *Mus decumanus*]. Land and Water, 19th March 1892, p. 313.

ANON. [not signed]. CHESHIRE.

Scotch Deer Heads [with an illustration and dimensions of a head and horns of *Cervus elaphus* found during the cutting of Manchester Ship Canal between Runcorn and Warrington, larger than Scottish horns]. Field, 16th April 1892, p. 575.

ANON. [signed 'Rawdon Lee']. DURHAM, CHESHIRE, CUMBERLAND, YORK N.W., MID W., AND N.E.

Otters [*Lutra lutra*] and Otter Hunting [reviewing the prospects of the coming season, with the various packs, of which the North possesses—the Carlisle, 16 couples of hounds; the West Cumberland, 12 couples, at Cockermouth; the Hawkstone, 18 couples, at Tarporley, Cheshire; Mr. T. Wilkinson's, 15 couples, at Neasham Abbey, near Darlington; and Colonel Dawson's, at Weston Hall, near Otley; while Sir Charles Legard's pack at Ganton has been given up]. Field, 16th April 1892, pp. 551-552.

ANON. [not signed]. ISLE OF MAN.

Excursion to Ballaugh [7th June 1888; *Lepus cuniculus* noted]. Back Trans. Isle of Man N.H.S., p. 150; publ. with Yn Lioar Manninagh, No. 10, Jan.-April 1892.

ANON. [not signed]. WESTMORLAND.

Capture of a Wild Cat [*Felis catus*] in Westmorland [killed at Belah Bridge, near the Stainmore Fells, on 'Saturday last.'] Land and Water, 7th May 1892, p. 495.

ANON. [not signed]. YORK MID W.

Curious Behaviour of Rats [(*Mus decumanus*) at Burley, Leeds]. Land and Water, 14th May 1892, p. 519.

ANON. [signed 'T. W. P. (Lincolnshire).']. LINCS.

Early Leverets [(*Lepus timidus*) in Lincolnshire; and giving the sexual characters of leverets]. Field, 28th May 1892, p. 810.

ANON. [signed 'Pit Geordie']. NORTHUMB. S.

Mr Wilkinson's Otter Hounds [in pursuit of *Lutra* on the Blyth from Stannington; a female Otter killed, 24th May 1892]. Field, 28th May 1892, p. 816.

ANON. [signed 'R. B. L.']. FURNESS, WESTMORLAND, LANC. W.

Re-establishment of the Kendal Otter Hounds [to hunt *Lutra* in the Lake District and on the Lune from Kendal and Dallam Tower]. Field, 28th May 1892, p. 816.

ANON. [signed 'O.']. YORK S.E.

Foxes [*Vulpes vulpes*] and Wild Ducks [breeding in close contiguity at Bracken Stick Coverts, Holderness country, with freedom from molestation]. Field, 18th June 1892, p. 904.

ANON. [signed 'H. W.']. CUMBERLAND.

The West Cumberland Otter Hounds [in successful pursuit of *Lutra* on the upper reaches of the Ellen]. Field, 18th June 1892, p. 905.

ANON. [signed 'Rustic']. CUMBERLAND.

West Cumberland Otter Hounds [in Keswick Lake and on the river Cocker; a dog otter (*Lutra lutra*) of 21 lbs. killed]. Field, 9th July 1892, p. 76.

ANON. [signed 'C.']. CUMBERLAND.

West Cumberland Otter Hounds [in successful pursuit of *Lutra* at Threlkeld and at Keswick, 14th and 16th July 1892]. Field, 23rd July 1892, p. 158.

ANON. [not signed]. YORK S.W.

The Penistone Hunt [being some particulars of its history]. Field, 23rd July 1892, p. 158.

ANON. [signed 'St. Herbert']. CUMBERLAND.

West Cumberland Otter Hounds [in successful pursuit of *Lutra* near Keswick, 6th Aug. 1892]. Field, 20th Aug. 1892, p. 292.

ANON. [signed 'Wanny']. NORTHUMBERLAND S.

Otter Hunting in North Tyne [recording successful pursuit of *Lutra* near confluence of Reedwater and North Tyne, 15th Aug. 1892]. Field, 20th Aug. 1892, p. 292.

ANON. [not signed]. CUMBERLAND.

A Whale in the Solway ['A small whale of 10 ft. in length was stranded' near Battlehill, Annan, 24th Sept. 1892]. Field, 1st Oct. 1892, p. 523.

ANON. [not signed]. CUMBERLAND.

A Rare Whale in the Solway [captured at Battlehill, 30th Sept. 1892; identified as Risso's Grampus (*Grampus griseus*)]. Land and Water, 15th Oct. 1892, p. 405.

ANON. [not signed]. LINC. S.

Porpoise [*Phocæna communis*] inland [at Crowland, 20th Oct. 1892]. Field, 29th Oct. 1892, p. 661.

ANON. [not signed]. WESTMORLAND, CUMBERLAND.

[Review of Macpherson's] Fauna of Lakeland [with details as to *Meles meles*]. Field, 10th Dec. 1892, p. 895.

LIONEL E. ADAMS. YORK S.W.

Water Shrew [*Crossopus fodiens*] near Penistone [in October 1892; details]. Nat., December 1892, p. 368.

LIONEL E. ADAMS. YORK S.W.

Observations on the Mole [(*Talpa europæa*) found at Penistone, May 1892; detailed notes on its behaviour in captivity]. Zool., December 1892, pp. 421-2.

SAMUEL BARBER. CUMBERLAND.

Beneath Helvellyn's Shade. Notes and Sketches in the Valley of Wythburn | . . | . . | . . | [4 lines of poetry] | London: | Elliot Stock . . | 1892 [small 8vo, pp. x + 166; mentions hunting of *Lepus timidus* by the Windermere Harriers (p. 68)].

GEORGE BOLAM. CHEVIOTLAND, DURHAM, NORTHUMB. S.

Daubenton's Bat [*Vespertilio daubentonii*] in Northumberland and on the Borders, with some Remarks [in detail] upon the other [7] species for the district. Nat., Sept. 1892, pp. 269-272.

HARRY B. BOOTH. YORK S.W.

Notes from West Yorkshire [anent occurrence of *Sorex minutus* near Bradford]. Garner, 1st Sept. 1888, p. 188.

THOMAS BUNKER. YORK S.E.

[Mammal observed by] the Yorkshire Naturalists' Union at Withernsea [on 1st Aug. 1892; *Erinaceus* near Holmpton]. Nat., Oct. 1892, p. 294.

JAMES BUTTERWICK. NOTTS.

Welbeck Abbey II. the Seat of the Duke of Portland [noting 'the White Deer Park, dotted with its snowy herd one of the few and the largest of White Deer in England'; species not stated]. Graphic, 15th June 1889, p. 656.

L. BUTTRESS. NOTTS.

Natterer's Bat [*Vespertilio nattereri*] in Notts [one at Grove, near Retford, June 1888]. Zool., April 1892, p. 144.

L. Buttress. Notts.

Early Appearance of the Noctule [(*Vesperugo noctula*); at Grove Rectory, near Retford, where it is fairly abundant, it has appeared 18th March 1892, and 14th March 1890]. Field, 23rd April 1892, p. 585.

Leonard Buttress. Notts.

Pied Stoat [*Mustela erminea*] in Notts in May [1892, at Little Gringley]. Zool., Aug. 1892, p. 310.

Basil Carter. York N.W.

Occurrence of the Lesser Shrew [*Sorex minutus*] near Masham; an Addition to the List of Yorkshire Mammals [details given; and note by W. E. Clarke appended]. Nat., Dec. 1892, p. 368.

James Carter. York N.W.

Hare [*Lepus timidus*] encumbered with Balls of Snow [on breast, seat, and hindquarters; presumably near Masham]. Field, 2nd April 1892, p. 486.

James Carter. York N.W.

Moles [*Talpa europæa*] Swimming [across the Yore at Masham; a not uncommon habit]. Field, 16th April 1892, p. 545.

H. Charbonnier. York S.W.

Hairy-armed Bat [*Vesperugo leisleri*] in Yorkshire [several shot on the wing at Mexborough, May and June 1890; editorial note suggests confusion with young *V. noctula*]. Zool., Sept. 1892, p. 329.

W. J. Clarke. York N.E.

Whiskered Bat [*Vespertilio mystacinus*] near Scarborough [at Willerby in Oct. 1889]. Zool., March 1892, p. 108.

William J. Clarke. York S.E.

Badgers [*Meles meles*] near Scarborough [a pair taken alive and a perfect skull found at Flixton, 15th April 1892]. Zool., June 1892, p. 222.

William J. Clarke. York N.E.

Polecats [*Mustela putoria*] at Scarborough one hundred years ago [being extracts from the churchwardens' accounts in 1774-5-6, also for *Mustela vulgaris*; followed by writer's own reminiscences of the last-known examples, about 1882]. Zool., June 1892, pp. 222-3.

John Cordeaux. Linc. N.

A White Seal [*Phoca vitulina*] on the Lincolnshire Coast [by Tetney Haven, mid-Dec. 1891: *Halichærus gryphus* shot near the same place two or three years ago]. Nat., March 1892, p. 75.

John Cordeaux. York S.E., Linc. N.

Rorqual [*Balænoptera musculus*] in the Humber [at Spurn, 14th April 1892; measurements given]. Zool., June 1892, p. 224.

John Cordeaux. York S.E., Linc. N.

Occurrence of the Common Rorqual, or Finner [*Balænoptera *musculus*], in the Humber [at Spurn, 14th April 1892; details given of measurements and capture]. Nat., June 1892, pp. 187-188.

W. N. Craig. Westmorland.

The Weather in Westmoreland [at Kendal; noting that *Erinaceus*, which usually hibernates during winter, has lately been as active as in summer]. Gard. Chron., 16th Feb. 1889, p. 211.

J. Burtt Davy. Linc. N.

[Mammal observed by] Lincolnshire Naturalists at Gibraltar Point [on 15th Aug. 1891; *Arvicola amphibia*, young]. Nat., Feb. 1892, p. 47

C. W. Dod. Cheshire.

Field Mice in Gardens [at Edge Hall, Malpas, are *Arvicola agrestis*, *A. glareola*, and *Mus sylvaticus*; their destructiveness noted; presence and habits of *Mustela vulgaris* also described]. Gard. Chron., 18th Feb. **1888,** p. 212.

R. S. Ferguson. Cumberland, Westmorland, Furness.

Preface [to Macpherson's Vertebrate Fauna of Lakeland; includes notices of occurrence of antlers of *Cervus elaphus* in peat and elsewere]. Macpherson's Vertebrate Fauna of Lakeland, 1892, p. xi.

Riley Fortune. York N.W.

Mole [*Talpa europæa*] Swimming [across the stream at Whitfield Gill, Wensleydale, 28th June 1884]. Field, 23rd April 1892, p. 585.

Riley Fortune. York Mid W.

[Mammals observed by] the Yorkshire Naturalists' Union at Horton-in-Ribblesdale [on 14th May 1892; *Talpa*, *Mustela vulgaris*, *M. erminea*, *Lepus timidus*, and *L. cuniculus* noted]. Nat., June 1892, p. 180.

Riley Fortune. York N.E.

[Mammals observed by] the Yorkshire Naturalists' Union at Coxwold and Byland [Sept. 1892; *Talpa*, *Sorex tetragonurus*, *Mustela vulgaris*, *M. erminea*, *Arvicola amphibia*, *Lepus timidus*, and *L. cuniculus*]. Nat., Nov. 1892, pp. 345-346.

J. H. Fryer. York N.E.

[Squirrels (*Sciurus vulgaris*) at Sandburn; and *Mustela erminea* at Clifton, York]. N.H.J., 15th June 1892, p. 76.

Parker Gillmore. Cumberland.

Irish Hares [with a reference to the *Lepus europæus* of the Aspatria district of Cumberland and their gameness]. Land and Water, 14th March **1891,** p. 344.

Leo H. Grindon. Lanc. S., Furness.

Lancashire [;] Brief Historical and Descriptive Notes. . . . 1892 [8vo, cloth; xi + 355 pages and numerous illustrations: at p. 229 noting that in 1817 Blackpool was only a rabbit warren; at p. 298 to the 'last of the English wolves' (*Canis lupus*) being killed at Wraysholme].

G. H. Caton Haigh. Linc. N.

Bottle-nosed Dolphin [*Delphinus tursio*] on the Lincolnshire Coast [at Marsh Chapel, 5th Nov. 1891, a small one; several previous occurrences at Tetney Haven mentioned in detail]. Zool., Jan. 1892, p. 21.

J. E. Harting. Cumberland.

[Pine Marten (*Martes martes*) trapped in Cumberland, exhibited]. Linn. Soc., 5th April 1888; Gard. Chron., 14th April **1888,** p. 471.

J. E. Harting. Cheviotland, Northumberland, Durham, Linc. N., Furness.

The British Marten. *Martes sylvatica*, Nilsson [and its range in Northumberland S., Cheviotland, Durham, Furness, and North Lincolnshire, with fully-detailed particulars; noting also that its bones, along with those of *Cervus elaphus* and *Meles*, were found in the caves at Whitburn Lizard in 1879]. Zool., April 1892, pp. 131-134.

J. E. Harting [not signed]. Cumberland, Westmorland, Furness.

[Review of] A Vertebrate Fauna of Lakeland; . . . By . . H. A. Macpherson [with notes as to *Castor fiber* remains near Clouds, Westmorland]. Zool., Dec. 1892, p. 437.

F. M. A. Hatchard. York S.W.

Early Leverets [(*Lepus timidus*) on 17th March 1892, about Stapleton Park, Pontefract, where Hares are scarce]. Field, 28th May 1892, p. 810.

CHARLES HEAD. YORK N.E.

[Exhibition of two *Vespertilio mystacinus* taken near Scarborough]. Proc. Linn. Soc. Lond., 21st April 1892, p. 53; Athenæum, 7th May 1892, p. 603; Zool., June 1892, p. 233.

H. B. HEWETSON. LINC. N., YORK S.E.

Rorqual [*Balænoptera musculus*] on the Lincolnshire Coast [which had been stranded on the Old Den, Spurn Head, on Good Friday, 15th April 1892; details given]. Field, 30th April 1892, p. 625.

H. H. HIGGINS. LANC. S., CHESHIRE.

Pioneers in Local Biology [giving Bibliographical Notes of work done in the Liverpool district, and noting *Hyperöodon*, *Myoxus*, and *Martes*]. First Report on Fauna of Liverpool Bay, **1886,** pp. 16-31.

WM. HODGSON. CUMBERLAND.

Otters [*Lutra lutra*] not found in the Caldew [criticized at length as a mistaken idea; and numerous records given]. Nat., Jan. 1892, p. 20.

WM. INGRAM. LINC. S.

Field Mice [at Belvoir and their ravages described; *Arvicola *agrestis* and *A. glareola*; the latter described as gregarious and migratory, abundant one year and then disappearing]. Gard. Chron., 25th Feb. **1888,** p. 244.

PERCY F. KENDALL. YORK S.W.

Note on the Mode of Preservation of the Bones [of remains of Fallow Deer (*Dama dama*) from Goole Moor, supplementary to Waite's note]. Nat., June 1892, pp. 169-170.

P. M. C. KERMODE. ISLE OF MAN.

Phenological Observations [giving Manx dates for *Vespertilio *pipistrellus* and *Lepus timidus*]. Yn Lioar Manninagh, April 1892, p. 350.

H. WALLIS KEW. LINC. N.

Field Notes. No. 1. In the Woods [near Louth] in Spring [noting dead *Erinaceus* in Muckton Wood, and dead *Mustela erminea* and *M. vulgaris* on the vermin-tree in Burwell Wood]. Nat. World, Jan. **1886,** p. 2.

M. K[ITCHING]. YORK S.E.

[Notes made by] York, The Mount. Nat. Hist. Society [*Sciurus seen at Stamford Bridge]. N.H.J., 15th Oct. 1892, p. 111.

JOHN LEYLAND. DERBYSHIRE.

The Peak of Derbyshire [;] its Scenery & Antiquities [with mention of remains of *Bison*, *Rangifer tarandus*, *Cervus capreolus*, *Ursus ferox*, *Canis lupus*, *C. vulpes*, *Lepus timidus*, and *Vespertilio* in a fissure of the Windy Knoll Quarry (p. 65); and of *Sciurus* in Great Shacklow Wood (p. 237)]. London, **1891,** 8vo. 340 pages with map and illustrations.

G. E. LODGE. LINC. N. OR S.

The Marten [*Martes martes*] in Surrey and Lincolnshire [near Lincoln, teste G. Adrian]. Zool., May 1892, p. 190.

R. LYDEKKER. DOGGER BANK.

Wild Oxen [noting that skulls of *Ovibos moschatus* have been dredged up from the Dogger Bank]. Land and Water, 16th Jan. 1892, p. 80.

R. LYDEKKER. YORK S.E., LINC. N. AND S.

British Whales [enumerated, with mention of *Balænoptera musculus* at Skegness, 1887; *B. borealis* in the Humber, 1884; *Hyperoödon rostratus* at Flamborough, 1888, and in the Wash, Hunstanton, 1888; *Mesoplodon bidens* at Spurn, 1886; and *Tursiops tursio* in the Humber, 1889; with bibliographical references]. Field, 17th Sept. 1892, pp. 469-470.

H. A. MACPHERSON. DURHAM, CUMBERLAND.

Roedeer [*Cervus capreolus*] in Co. Durham [had probably wandered from Naworth, where the species has probably existed ever since Lord Wm. Howard's time; also exists on the Netherby estate near Longtown]. Field, 6th Feb. 1892, p. 177.

NORTHUMB., LINC. N., WESTMD., CHESH., FURNESS, YORKSH.,
H. A. MACPHERSON AND O. V. APLIN. CUMB., DURHAM, NOTTS.

On a Black Variety of the Water Vole, *Arvicola amphibius* [giving negative evidence for Northumberland and Durham, and details of occurrences in Cumberland, Westmorland, Yorkshire, Furness, Cheshire, Lincolnshire North, and Notts]. Zool., Aug. 1892, pp. 286-289.

H. A. MACPHERSON. CUMBD., WESTMD., FURNESS.

A Vertebrate | Fauna of Lakeland | including Cumberland and Westmorland | with Lancashire North of the Sands | . . | . . | . . | . . | . . | . . | . . | . . Edinburgh | 1892 [has a chapter on 'The Extinct Mammals of Lakeland,' pp. xl-lviii, dealing with 9 species; a note by F. Nicholson on the *Martes martes*, at pp. lx-lxiii; a note on 'The Destruction of Wild Animals' at pp. lxiv-lxxiii, including notes from Churchwardens' accounts; a chapter on 'Variation of Colour in Animals' at pp. lxxiv-lxxvi; a chapter on 'Introduced Species' at p. xc.; a 'Review of the Fauna of Lakeland' at p. xciv; the list of Mammalia occupies pp. 1-86, in which 42 species, both land and marine, are treated of in detail, and illustrated by two etched plates; at pp. 527-530 are given further notes on *Felis catus*, *Meles*, *Cervus elaphus*, *Orca gladiator*, *Bos taurus*, and *Lepus europæus*].

R. T. MANSON. DURHAM, YORK N.W.

Zig-Zig Ramblings by a Naturalist [round Darlington; *Talpa *vulgaris* at Redcar Field (p. 93); and *Lutra* in the Tees (p. 113); a list of 21 species occurring in the district given at pp. 133-4]. Small 8vo. Darlington, **1884**.

THOMAS J. MOORE. CHESHIRE, LANC. S., YORK S.E., LINC. N.

Report on the Seals and Whales (Pinnipedia and Cetacea) of the L[iverpool].M.B.C. District [recording *Phoca grœnlandica* Fab. (Lanc. Coast, 1874), *Halichœrus grypus* Fab. (Liverpool Docks, 1861), *Cystophora cristata* Erxl. (Mersey shore at Frodsham Marsh), *Megaptera longimana* Rud. (Speke, 1863), *Hyperoödon rostratus* Chemn. (East Hoyle Bank and Speke), *Phocæna communis* F.Cuv. (common), *Orca gladiator* Lac. (West Kirby), *Lagenorhynchus albirostris* Gray (Little Hilbre, 1862), *Globicephalus svineval* (Humber, 1862), and *Delphinus delphis* L. (New Brighton, 1879)]. Proc. Liverp. Biol. Soc., Vol. 3, 1888-9, publ. 1889, pp. 261-278; reprinted with pagination altered to 134-151, in Second Report on Fauna of Liverpool Bay, **1889**.

T. J. MOORE. LANC. S.

Opening Address on the History of the Living Collections at Knowsley [giving history and details of the celebrated collection formed by Lord Derby and dispersed in 1851; although not strictly faunistic, a note of this is interesting to place on record]. Trans. Liverp. Biol. Soc., Vol. 5, 1890-91, publ. **1891**, pp. 1-18.

T. J. MOORE. LANC. S.

Opening Address: Notes on the History of the Living Collections at Knowsley. Proc. Liverp. Biol. Soc., Vol. 6, 1891-92, publ. 1892, pp. 1-9.

T. J. MOORE. CHESHIRE.

[Capture of a Seal (*Phoca vitulina*) at Hoylake, Dec. 1891]. Proc. Liverp. Biol. Soc., Vol. 6, 1891-92, publ. 1892, p. xii.

CUMBD., WESTMD., NORTHUMBD.,
FRANCIS NICHOLSON. DURHAM, FURNESS, LINCS.

. . **On the Pine Marten [(*Martes martes*) and its occurrence in** the Lake district]. Macpherson's Vertebrate Fauna of Lakeland, 1892, pp. lx.-lxiii.

CHAS. OLDHAM. CHESHIRE.

Unusual Nests of Water Voles [(*Arvicola amphibia*) in the reed-beds at Pickmere Mere, near Northwich, a few years ago; there were three ball-shaped nests not in a burrow]. Nat., Jan. 1892, p. 4.

CHAS. OLDHAM. YORK MID W.

The Gisburne Herd of Wild Cattle [(*Bos taurus*); describing the stuffed Cow in the Manchester Museum as having small roan-coloured spots]. Zool., April 1892, p. 143.

G. READE. WESTMORLAND.

Rats [*Mus decumanus*] eating Gooseberries [at Milnthorpe, Westmorland]. Zool., Oct. 1892, p. 354.

J. M. RIDLEY. NORTHUMBERLAND S.

Cross between Hare and Rabbit [(*Lepus timidus* and *L. cuniculus*), shot on the edge of the moors at Parkend in 1874, in Northumberland]. Land and Water, 5th March 1892, p. 249.

W. DENISON ROEBUCK. YORK N.W.

Long-Eared Bat [*Plecotus auritus*] in Swaledale [caught by John Shillito, at Richmond, 16th Sept. 1891]. Nat., Jan. 1892, p. 4.

W. H. ST. QUINTIN. YORK S.E.

The Preservation of Indigenus Animals [noting Presence of Colonies of *Meles* and of *Lutra* in Scampston Park, where they are protected]. Field, rep. Selborne Mag., July **1889,** p. 109.

R. SERVICE. CUMBERLAND.

Risso's Grampus [*G. griseus*] in the Solway [one taken near Annan, 24th Sept. 1892; particulars given of previous occurrences, British and foreign]. Zool., Nov. 1892, p. 404.

A. B. SKIPWORTH. LINC. N.

Ferret bitten by a Fox [*Vulpes vulpes*], at Holbeck Hall near Horn-castle, last week]. Field, 12th March 1892, p. 356.

F. H. SMITH. NORTHUMBERLAND S.

Early Leverets [(*Lepus timidus*) at Whalton, Northumberland; five on 1st May]. Field, 28th May 1892, p. 811.

THOMAS SOUTHWELL AND WILLIAM EAGLE CLARKE. YORK S.E., LINC. N.

On the Occurrence of Sowerby's Whale (*Mesoplodon bidens*) on the Yorkshire Coast [giving details of capture, etc., of one stranded at Spurn, 11th Sept. 1885; and list of previous occurrences; this being the first record for England]. Nat., Dec. 1885, pp. 385-6; Ann. and Mag. Nat. Hist. Jan. **1886,** pp. 53-59; and Zool., Feb. 1886, p. 70.

THOMAS SOUTHWELL. YORK S.W., MID W. AND S.E., LINC. N.

British Whales [with notes of Occurrences of *Orca gladiator* in the Humber estuary, captured 1st Nov. 1885; *Delphinus tursio* near Old Goole, 4th Oct. 1881 and 16th Oct. 1882, and in Tetney Haven Nov. or Dec. 1888]. Field, 1st Oct. 1892, p. 537.

JAMES SUTTON. CUMBERLAND.

Marten [*Martes martes*] and Wild Cat [an old male Marten caught 5th March 1892 in Cumberland; the Cat was Scottish]. Zool., June 1892, p. 223.

M. LAWSON THOMPSON. YORK N.E.

Some [detailed] Notes on the Long-eared Bat [*Plecotus auritus*] in captivity [as observed in a specimen captured at Saltburn-by-the-Sea]. Nat., Jan. 1892, pp. 18-20.

EDGAR R. WAITE. YORK MID W.

Young Otter [*Lutra lutra*] at Thorp Arch [on the 6th Jan. 1892; showing that the animals must have bred about the turn of the year]. Nat., March 1892, p. 75.

EDGAR R. WAITE. YORK S.W.

Remains of Fallow Deer [*Dama dama*] from Goole Moor [as sent by Thos. Bunker; fully described, with extracts from De la Pryme's accounts of their former existence on the moor; with note by Percy F. Kendall on the mode of preservation]. Nat., June 1892, pp. 167-169.

EDGAR R. WAITE. YORK N.W.

[Mammals observed by] the Yorkshire Naturalists' Union at Rokeby [on 6th June 1892; *Talpa*, *Lepus timidus*, and *L. cuniculus*]. Nat., July 1892, p. 209.

EDGAR R. WAITE. YORK N.E.

Whiskered Bat [*Vespertilio mystacinus*] at Goathland [caught 8th August 1892]. Nat., Sept. 1892, p. 272.

EDGAR R. WAITE. YORK N.E.

Whiskered Bat [*Vespertilio mystacinus*] at Ingleby Greenhow [a female found by Rev. John Hawell, 22nd Sept. 1892]. Nat., Nov. 1892, p. 336.

W. W. WATTS. NOTTS, DERBYSHIRE.

Przevalsky's Horse [compared with the Cresswell remains and the drawings on antlers from the Caves of La Madeleine]. Nature, 4th Sept. **1884**, p. 436.

A. D. WEBSTER. CHESHIRE.

The Wild Cat [(*Felis catus*); asking if extinct in Britain; and noting that it is so in 'one of its last English shelters—Delamere Forest']. Gard. Chron., 28th June **1884**, p. 831.

E. G. WHELER. CHEVIOTLAND, NOTTS.

White Red Deer [(*Cervus elaphus*) have existed in Alnwick Park for many years, but now only one stag is left; editor adds on authority of Whitaker's book that they exist at Langley (35), Welbeck (14), Woburn (18), Alnwick (2) and Ashridge (1)]. Field, 12th Nov. 1892, p. 751.

J. WHITAKER. LINC. N. AND S.

The Deer Parks and Paddocks of England [giving list of 6 in Lincolnshire]. Land and Water, 6th Feb. 1892, p. 149.

CHESH., WESTMD., LANC. S. AND W., CUMB.,
J. WHITAKER. FURNESS, DURHAM AND NOTTS.

The Deer Parks of England [giving list of Cheshire and West-morland parks, with request for information]. Land and Water, 21st March **1891**, p. 351. [Enumerating 2 in Cumberland and 5 in Lancashire with Furness]. Land and Water, 4th April **1891**, p. 414. [Enumerating 4 in Durham, and 9 in Notts]. Land and Water, 11th April **1891**, p. 448.

J. WHITAKER. NOTTS.

Age at which Fallow-deer [*Dama dama*] breed [as noted at Rainworth, Mansfield, Notts]. Field, 9th July 1892, p. 47.

CUMB., WEST., NOTTS, DURHAM, NORTHUMB. S., CHEVIOTLAND,
CHESH., YORK N.W., MID W., S.E., DERBYSHIRE,
JOSEPH WHITAKER. LANC. S. AND W.

A Descriptive List of the Deer-Parks and Paddocks of England . . London . . 1892 [at p. 6 reference made to *Cervus elaphus* wild on Martendale Fell, at p. 7 to *C. capreolus* sparingly wild in Northumberland, Cumberland, and Durham, at pp. 8 et seq. notes on the habits of *C. dama* at Rainworth, Notts, at p. 15 *C. elaphus* kept alone at Barningham and Bolton Abbey, detailed notes at pp. 15-16 on the White *C. dama*

at Welbeck and Sledmere and the melanic breeds at Levens and Stanton-in-the-Peak; the body of the work gives details of the various parks, county by county; other mammals mentioned are *Lepus timidus, L. cuniculus* in Cumberland (p. 36); the latter in N. Lincs. (95), Wild White Cattle (*Bos taurus*) at Chillingham Park (p. 112), formerly at Wollaton, Notts, and Annesley, Notts (details given, p. 115), *Lepus timidus* in Westmorland (p. 164), *Meles* and *Lutra* in N.E. Yorkshire (p. 179)]. Reviewed at length in Athenæum, 25th March 1893, pp. 371-2; and in Nat., May 1894, pp. 159-160.

F. B. WHITLOCK. NORTHUMBERLAND S.

Black Variety of the Water Vole [*Arvicola amphibia*] in Northumberland [at Harbottle in Upper Coquetdale, where they are frequently seen in the Coquet]. Zool., Sept. 1892, p. 329.

C. H. B. WOODD. YORK MID W.

Vertebrate Fauna of Langstrothdale, Mid-West Yorkshire [enumerating, with remarks, 19 species of mammals]. Nat., May **1891**, pp. 135-136.

The intent of these bibliographical citations is to give a complete series of references to books, papers, and records which have been printed or published with regard to the ten northern English counties and the Isle of Man, and to indicate the gist of the contents of each in as concise a form as may be consistent with making these papers of interest and of value to persons engaged in geographical natural history work. In the case of long lists or papers, the very briefest indications only are given, reference to the original work or paper being necessary. In the case of short records, however, the convenience of the user of the bibliography necessitates the giving of fuller detail and the name of every species included, or even by giving the whole substance (destitute of verbiage) to obviate the necessity of further reference. No apology need be given for giving matter of this kind in 'The Naturalist'; it may not be of interest to casual readers, but to actual workers it will be of decided use.

NOTE—COLEOPTERA.

***Orchesia micans* and *Clinocara undulata* near Barnsley.** I am expecting to have a goodly number of *Orchesia micans* Pz. emerge from my breeding jar about June or July, and shall be pleased to send living specimens of this curious insect to anyone who cares to send me a tube to contain them and a penny stamp to cover cost of postage. While dealing with this species, I am reminded of my good fortune in the capture of a nearly allied species, *Clinocara undulata* Kr., of which I first found traces in the shape of a pair of elytra in Edlington Wood on the occasion of the Y.N.U. excursion there in 1891. The following year I was more successful, being able to secure one in Green Farm Wood on the 7th June. Like *O. micans* it is rather an awkward species to capture, owing to its jumping powers. Canon Fowler (Col., vol. v., p. 38), who describes it as being 'very local and, as a rule, rare,' graphically adds 'the only specimen I have ever seen alive was gone immediately before I could secure it.'—E. G. BAYFORD, 2, Rockingham Street, Barnsley, 17th Feb. 1898.

NOTE—LEPIDOPTERA.

Information Wanted as to Yorkshire Records for Lepidoptera. – I have recently been engaged in looking up the back entomological magazines for data as to localities, dates, and general information relating to the Limacodid, Procrid, Zygænid, Lasiocampid, Saturniid, and Sphingid Moths for a book that is now going through the press. There are two records, however, that I wish to ask a question about.

(1) The capture of *Adscita* (*Procris*) *globulariæ* at Aysgarth, Yorkshire, by Mr. Rowntree (Nat.).

(2) The record of a larva, Sept. 1876, from birch, of *Apoda limacodes* (*testudo*) by Mr. Wilson (Entom.).

Of course my friend Mr. Porritt will say with me—Errors, cut them out. That, as a matter of fact, is all one can do in the present state of our knowledge, as it is a great mistake to perpetuate even possible blunders. But I should like to know how it was that the species were in the first place recorded by men of known entomological capacity, and secondly, whether there be any evidence that will support the maintenance of these species in the Yorkshire list?

Another question now arises about another species. I have in my collection specimens of the small form of *Anthrocera* (*Zygæna*) *trifolii* labelled 'Richmond, Yorks.' I have no other data, nor do I know now from whom I obtained the specimens. I have also several very fine examples of *A. trifolii-major*, the late form, captured by Mr. Boult between Bridlington and Flamborough. Now, it has long been a matter of doubt whether *A. trifolii* occurred in Yorkshire at all, and some authorities have gone so far as to tell me they doubt its actual occurrence. This doubt cannot possibly exist any longer. I would, however, ask all Yorkshire lepidopterists to submit any doubtful specimens to Mr. Porritt or to myself without delay, as I am anxious to get some idea as to the distribution of this species in our many-acred county.

May I also, although nothing to do with the above, ask all entomologists in our northern counties to supply me with tabulated lists of any common (or rare) species belonging to the above families that they may have captured, under the heads of:—Locality, Year, Actual Date, Habitat, Notes (habits, variation, etc.)? What, for instance, is the range of *Clisiocampa neustria*, *Gastropacha quercifolia*, *Odonestis potatoria*, *Trichiura cratægi*, *Lasiocampa trifolii*, and *Eriogaster lanestris* in Yorkshire, Lancashire, Westmorland, Cumberland, Durham, and Northumberland, and in the counties just to the south of these? What is the most northerly range of *A. geryon* in these counties? Does *A. loniceræ* reach into Westmorland, Cumberland, and Northumberland, and what are its haunts? The last species goes into Scotland, hence its distribution in the northern counties is probably general. With such a powerful society as the Yorkshire Naturalists' Union, a reference list of lepidoptera, showing the range of these species over the whole area comprised in its sphere, should not be too difficult a task for attainment. Could not the tremendous energy of the present President of the Entomological Section be thrown into the accomplishment of this desirable piece of work?

I know I rightly deserve the censure of Mr. Porritt and Dr. Ellis for writing this, considering that their local lists are still among the best ever produced. But I must risk their displeasure. I know what I want and I am trying to get it, and there are so many excellent lepidopterists in our northern counties that it is only a matter of having the right man at the head of the section to have the thing done.—J. W. Tutt, Westcombe Hill, London, S.E., 30th January 1898.

[May we ask that replies to these queries, and notes arising therefrom, be sent for publication in 'The Naturalist'? Also that copies of the tabulated lists sent direct to Mr. Tutt be also addressed to the Editor of this journal.—Ed. Nat.]

NOTES ON THE SANDWICH TERN.

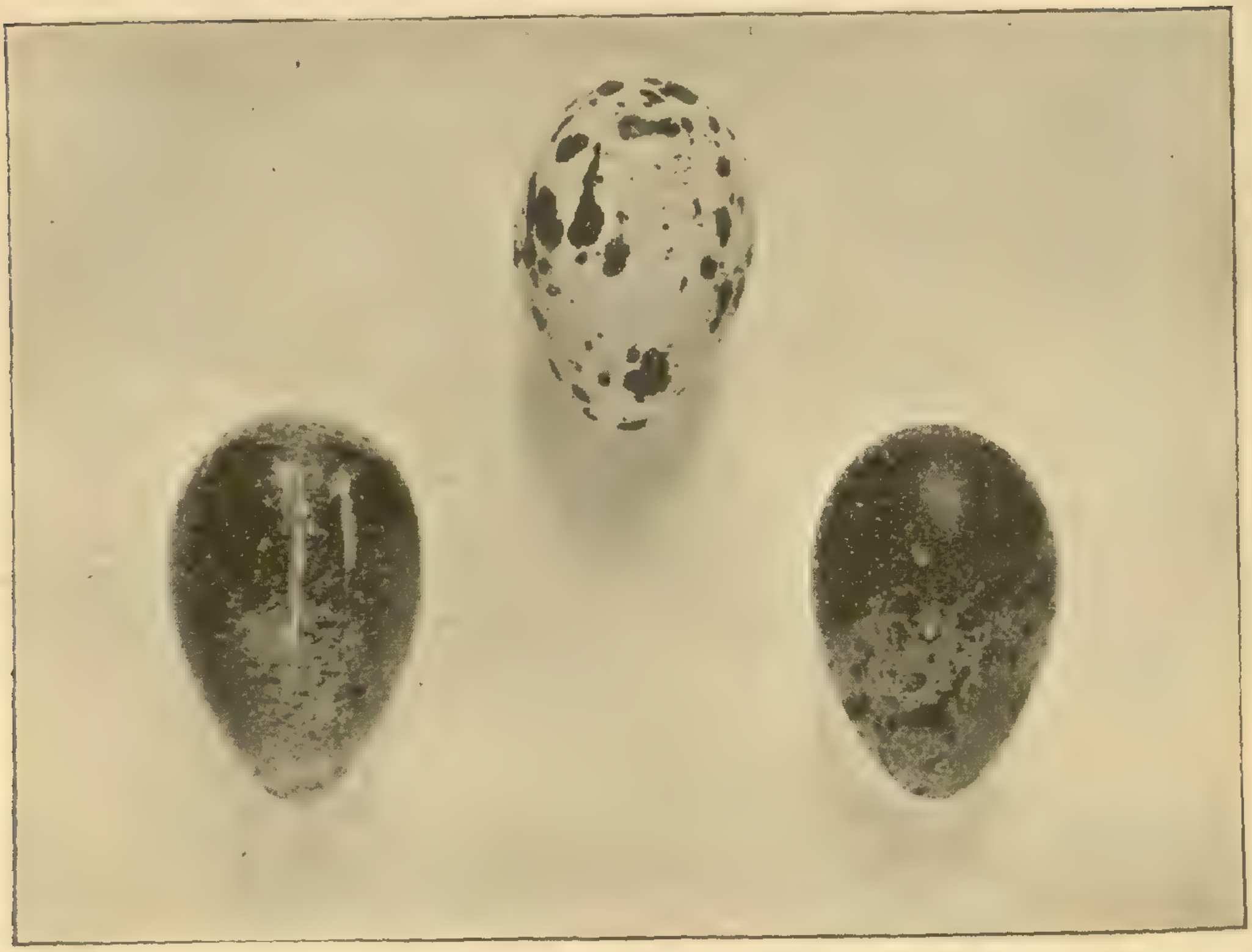
J. BACKHOUSE, F.L.S., F.Z.S., M.B.O.U.
Harrogate.

As may be generally known, one of the chief breeding-places in England of this 'Atlantic species' is upon the Farne Islands adjacent to the Northumberland coast. Here, during the past three years an acquaintance, developing on our side at least into a lasting friendship, has sprung up between us! Latterly, the birds have been steadily increasing in numbers, thanks to the unwearying watchfulness of the secretary of the Protection Society and of his excellent keepers resident upon the Inner Farne.

Two islands can each boast of a large colony of the Sandwich Tern—the first photograph representing that on the

Knoxes, where last year (1897) at least 100 pairs were nesting. Here, owing to the scanty herbage, one may walk among and freely examine dozens of eggs without the risk of breakage, which is not the case on the Wideopens, where nettles and campion grow rampant and shelter not only the Terns' nests but also hosts of Eider Ducks. The nest is usually a mere hollow in the 'shell-sand' or among very small pebbles, and is rarely lined at all.

The variation in the colour and markings of the Sandwich Terns' eggs has always (since our first introduction) been a study of great interest to the Writer, and it is with satisfaction that the accompanying illustration of three eggs is here appended.



These may be looked upon as extremes of the chief types to be met with on the Farnes, and it may here be noted that the darkest type is by far the rarest. All the figured specimens were taken from the Knoxes colony at various times by the Writer, and have been specially selected. Photography cannot, of course, do justice to any of the three, so much character and beauty being lost through absence of colour, but with the advent of another century one trusts that colour photographing may be rendered more possible. Egg No. 2 especially needs to be seen to be appreciated, but it may help to convey a more exact idea of the colouration when described as closely resembling in main characteristics the egg of a Red Grouse. No. 1 is very black and white in appearance, and was found laid side by side with an egg of the Arctic Tern in the same nest. The watchers report that this habit of house sharing or 'taking a lodger,' as we should term it, is by no means frequent.

Although seen during April, Mr. Darling—the head watcher says that these birds do not settle on the Islands before May. Then they remain for an hour or so during the morning, taking to wing again for the rest of the day, and finally begin to lay on or about the 15th of the month. Incubation, it appears, lasts for a little over three weeks. By the end of August, all the Sandwich Terns, both old and young, have left the Islands. This species is a regular visitor to Yorkshire, especially during the autumn months, on its way South to winter quarters on the coasts of India and Africa.

SIR JOSEPH BANKS' JOURNAL.

Journal | of | The Right Hon. | Sir Joseph Banks | Bart., K.B., P.R.S., | during Captain Cook's first voyage in H.M.S. | Endeavour in 1768-71 to Terra del Fuego, | Otahite, New Zealand, Australia, | the Dutch East Indies, | etc. | Edited by | Sir Joseph D. | Hooker | With [2] portraits and [5] charts | London | Macmillan and Co., Ltd. | . . | 1896 | All rights reserved [8vo, cloth, pp. lii. + 468; Cash Price in Great Britain 17s. net].

This fine—nay more, fascinating—work calls for a longer notice than we, on several accounts, can give it; yet, for one reason, a pointed reference it deserves and must have. Although born in 'London town,' Sir Joseph Banks was by parentage and territorial connexions a native of 'level Lincolnshire'—that 'county of broad acres' second only to York, that land of the Coritani whose morasses and felled firwoods stayed at last Cæsar's advancing legions. And not only, too, as a 'patron' of science in general, in those 'long days' when George the Third was King, but as a botanist and zoologist whose investigations of the then aboriginal and secluded haunts of wild-life known as East and West Fen—a land of lakes like unto the Nile delta to-day—have become 'classic'; all, alas! remain to us now as pictures of his word-painting only: a condition of nature not simply deeply-interesting to the naturalist, but a knowledge of which (as with the 'Lincoln Gap') is essential to any right understanding of the flora, fauna, topography, and zoography of these later days. The book itself does not record these contributions to east-country natural history, for it deals with Banks' voyage with Yorkshireman Cook to Otahite, the Land of Fire, and the Dutch Indies, and as such calls for no detailed comment from us; but it is the learned yet very human Author of the Journal that we have to thank Sir Joseph Hooker, as editor, for once again bringing to our mind in such a way as to render Banks an imperishable and abidingly-pleasant memory. As with Darwin, so with Banks—the training of a long sea-voyage and daily journalising eventuated in a method and increasing precision of observation that, entered on and pursued by a sufficiently-equipped mind, leads upward, ever, on a ladder of faculty, to the highest results. Darwin may have had the finer natural ability, but Banks laboured (at least) under the disadvantage of living a hundred years before him, when the appliances and adjuncts of investigation had reached no high degree of perfection. Franklin, Parry—Nansen, Jackson, are other parallels; *Scientia* especially rises 'on stepping-stones' of its dead self to loftier peaks. That

seems to be the moral the relation of events, etc., in the Journal emphasizes. In reading through the bulky volume one wonders how Banks managed to grasp so shrewdly as he did at the broad truth of the facts, in the hurry of the occasion, and face to face with so much that was unfamiliar and with no key to it in anything he had seen at home. There was, too, a lighter vein—a brighter strain, as of young blood, in his composition, too; whilst soberly enough interested in the celestial Transit of Venus occurring whilst at Otahite in June 1769, Banks clearly (on his own telling) was far from indifferent to those commoner terrestrial transits of Venus which have had, and perhaps ever will have, attractions for the weightier as for the lightest intellects! But it is all as decorously put as it was doubtless innocently indulged in. For precise particulars readers must go to the book which from cover to cover (not excepting Hooker's Memoirs of Banks and Solander) is brimful of dainties not caviare to the general.—F.A.L.

NOTE—MOSSES.

Larder's Lincolnshire Moss-List.—Bryologists will welcome Mr. Larder's list of Lincolnshire mosses which appears in 'The Naturalist' of this month. It is a pity, however, that the list was not compared with the London Catalogue (on which it seems to be based) before publication, as by this means several curious errors would have been avoided.

Five plants are recorded twice over under different synonyms, viz.:—

Pottia pusilla = *P. cavifolia.*
Bryum nutans = *Webera nutans.*
Mnium fontanum = *Philonotis fontana.*
Brachythecium purum = *Hypnum purum.*
Plagiothecium elegans = *P. borrerianum* (the true *P. elegans* of Hooker is not British).

A very puzzling record is that of *Bryum paludosum* L. After considerable search I have succeeded in tracing this as a very ancient name for *Seligeria setacea* (Wulf.) Lindb. = *S. recurvata* B.&S. (See British Moss Flora, vol i., p. 121). In the second edition of 'Muscologia Britannica,' however, it is queried as a synonym for *Weissia* (*Seligeria*) *pusilla*, so that the plant referred to is probably this latter, seeing that the species already figures in the list. It would be interesting to have this evidently ancient record verified. The appropriateness of the specific name *paludosum* is scarcely apparent.

In 'The Naturalist' of August 1896 appeared a paper on the mosses of South Lincolnshire, by the Rev. Wm. Fowler. I notice that three species mentioned in that list are absent from Mr. Larder's, viz.: *Philonotis calcarea*, *Eurhynchium piliferum*, and *Amblystegium fluviatile*. On page 255 of the vol. for 1897 *Hypnum exannulatum* is mentioned as occurring near Gainsborough, also on Mr. Fowler's authority. This is not included in the present list. If these omissions are intentional, a note of explanation is desirable.

There is evidently much more to be done by bryologists in the county. Diligent search should add some 40 or 50 species to those now put on record.—Llewellyn Jameson Cocks, Godolphin House, Harrogate, 1st Feb. 1898.

NEOLITHIC LIFE IN LINCOLNSHIRE.

JOHN H. COOKE, F.G.S., F.L.S., etc.,
Vice-President of the Lincolnshire Science Society.

FIRST PAPER.

The historic and the pre-historic monuments of Lincolnshire have for some years past engaged the attention of the geologists and archæologists of the county. But though the study of the historic has been vigorously pursued, and has been productive of interesting and valuable results, that of the pre-historic has received but casual notice and scant commentary In the course of some geological work in which I have been engaged, I have had occasion to devote some attention to investigations that trench on the domain of the archæologist; and I now propose to briefly indicate the evidences that Lincolnshire supplies in proof of its former occupation by races of whom history takes no cognizance.

In the interpretation of these evidences, and in tracing out the histories of the people with whom they are connected, we are, at the outset, confronted with a difficulty that is unknown to the student of the histories of modern races. There are no traditions to assist, but reliance has to be placed entirely upon the empirical study of the monuments, implements, and other relics that have been preserved in the soils of the county in a more or less satisfactory condition.

For expediency anthropologists have divided the period that intervened between the occupation of Britain by the earliest known races, and the advent of the Romans in 55 B.C., into two periods of time of unknown duration. The first and more ancient is known as the 'Palæolithic' age, a word which signifies 'ancient stone'; while the second and more recent period is called the 'Neolithic' or later stone age. Up to the present time, no traces of Palæolithic man have been found in Lincolnshire. To those who have studied the geology of the county this fact is not remarkable. The nature of the rocks, and the manner in which they were ground down by the great glaciers that once covered them, are not favourable to the finding of any traces of the peoples who resided here during the Glacial period. But it does not follow that, because such remains have not been found, they do not therefore exist. The areas south of Lincolnshire have furnished abundant and unequivocal evidences; and further research may possibly be rewarded in this county also.

March 1898.

But what is wanting in Palæolithic remains is compensated for in the abundance of relics that the races of the Neolithic or later Stone Age have left scattered over the county. The Neolithic peoples were rude nomadic races of hunters and fishers, but with a civilization that was far in advance of their Palæolithic predecessors. They practised rude arts, erected roughly-formed monuments, and attained to the dignity of clothing. A characteristic feature of the Neolithic period is the perfected methods employed in manufacturing stone implements for war and the chase. All of the Lincolnshire weapons are symmetrically formed, and most of them are beautifully polished. In the light of modern discovery and scientific investigation, both anthropologists and comparative anatomists agree in declaring that the two peoples were quite distinct, and that a great hiatus exists between the occupation of England by them, such as can only be measured by an enormous term of years. What became of the former, no one knows. They perhaps suffered extinction in these areas at the same time as the great cave lion, the cave tiger, the mammoth, and the other animals of the period that now no longer exist, or they may have followed the Arctic animals in their migrations to the north. They went as mysteriously as they came, and as soon as these areas were again rendered habitable by the recession of the ice-fields, the Neolithic people came and took up undisputed possession.

In Lincolnshire relics of early man have been found distributed more or less all over the county, but the district in which they specially abound is that which is occupied by the lines of sand-hills that flank the eastern slopes of the Trent and the Ancholme basins. These tracts are covered with extensive deposits of sand, which in places—as at Mumby, Brumby, Scotton, Manton, and Scunthorpe—have been drifted into dunes by the action of the wind. The reason why these sand-hills should have been chosen by the Neolithic people as places for settlement is evident. The comparative dryness, the elevation above the surrounding fen-land, and the manner in which they were protected on all sides from attacks, rendered them particularly suitable and desirable for this purpose. From these dunes and warrens a fairly complete and representative set of Neolithic weapons has been obtained. They include arrow-heads of various patterns, flint saws, knives, scrapers, borers, awls, drills, perforated hammer heads, querns, hoes, and celts. The material that has generally been used for the manufacture of these implements is flint; but hornstone, and basalt boulders from the glacial beds have also been largely utilized.

Arrow-heads are everywhere abundant from Croxby to Scotton. The Lincolnshire weapons may be broadly divided into three classes, according to their shapes, viz., leaf-shaped, lozenge-shaped, and barbed and tanged. The tang indicates attachment to a shaft, and therefore determines its purpose; but the mode of attachment of the untanged is not so obvious. It is probable, however, that they were affixed with bitumen, or a similar cement.

At Brumby and Croxby considerable numbers of scrapers have been found by various collectors. These scrapers are the simplest form of implement that the Neoliths made. They were usually fashioned out of a well-formed flint-flake, which was worked at one extremity to a convex edge, and were either manipulated with the hand or were inserted in a handle, and used to scrape and dress skins and to peel the bark from trees. One of the scrapers from Croxby Warren has on its surface two artificially-made pits or depressions, the raison d'être for which is not obvious. They are very similar to the depressions in the so-called 'cup-stones' that have been found in localities in England, Scotland, and America, but are very much smaller. Dr. Ramn, who has taken up the study of these remarkable efforts at sculpture, and has published a monograph on the subject, assigns to them a religious rather than a utilitarian character. This specimen is now in the collection of Mr. E. Brown, of Scunthorpe.

From the same locality Mr. Brown obtained a small flint saw, the cutting edge of which has been formed by the removal of a series of minute bulbs of flint, and, considering the brittleness of the material, the regularity of the serrations is remarkable.

This Lincolnshire implement offers many resemblances to the small, fragile flint saws that have been found in Leicestershire, and in the Neolithic tumuli of Denmark; but it is not equal to these either in design or finish. Another class of implement that is very common at Brumby and Croxby, is that known as drills. They are narrow pointed flint-flakes, that widen rapidly towards the base, and vary from one inch to three inches in length. It is supposed that they were intended for drilling holes in flint, bone, wood, and skins; and it was probably with implements of this description that the pit-like depressions in the scraper already alluded to were made.

The sand-warrens around Brigg, Broughton, Twigmoor, Gunthorpe, Caenby, and Manton are specially prolific in the smaller flint tools; and from the cachès of flakes and implements that here and there occur, it is evident that many of these localities once served as permanent sites for the manufacture of stone weapons.

March 1898.

TRENT FISHES NOT MENTIONED IN DRAYTON'S 'POLY-OLBION.'

J. W. CARR, M.A., F.L.S.,

Professor of Biology in University College, Nottingham.

In addition to the species enumerated in the 'Poly-Olbion' ('Naturalist,' February 1898, pp. 33-36), the following fishes occur in the Nottinghamshire Trent:—

Miller's Thumb (***Cottus gobio*** L.). Common.

Sticklebacks are abundant; the

Three-Spined Stickleback (***Gasterosteus aculeatus*** L.) is the prevalent form, but the

Ten-Spined Stickleback (***Gasterosteus pungitius*** L.) also occurs.

Burbot (***Lota vulgaris*** Cuv.). This occurs in the Trent, but not commonly.

Spined Loach (***Cobitis tænia*** L.). Scarce.

Shad (***Clupea alosa*** L.). Has been taken in the Trent at South Clifton.

ERRATUM.—In footnote on Crayfish, p. 36, for 'the Dove, a tributary of the Derwent which . . . . .' read 'the Dove, a tributary of the Trent.'

17th Feb. 1898.

NOTES—ORNITHOLOGY.

Turtle Dove in the Lancashire Fylde. -On 14th Sept. 1897, whilst shooting at Pilling in the Fylde district of North Lancashire, two Turtle Doves (*Turtur turtur*) were flushed out of a small covert, one of them being shot. The bird was immature. According to Mitchell's 'Birds of Lancashire,' the Turtle Dove is a rare visitor to this county.—EDWARD T. BALDWIN, 1, Gloucester Place, Portman Square, London, W., 14th January 1898.

Blackthroated Diver in the Humber Estuary.— A very fine specimen of the Blackthroated Diver (*Colymbus arcticus*) was shot on February 1st by Mr. C. M. Wawn, of Hull, while shooting in the estuary of the Humber. There was a stiff breeze at the time from the north-west, the bird came flying rapidly in a south-easterly direction right over the boat, about 20 yards high, and fell almost alongside. It is being stuffed by Mr. Philip Loten, naturalist, of Easington.—C. M. BARNES, Easington, Hull, 10th Feb. 1898.

NOTES AND NEWS.

'Some Considerations on the Nature and Origin of Species' are offered by Mr. J. W. Tutt, F.E.S., as a Presidential Address to the City of London Entomological and Natural History Society. The address was delivered on the 3rd of December, and a copy lies before us extending to 20 pages, but whether it is a reprint or an original publication does not appear. We have not space to analyse the address itself, and must content ourselves with the bare mention that it bears the impress throughout of the versatility and mental activity which so eminently characterize all the author's writings.

RESEARCHES AMONG ANNELIDS.

Rev. HILDERIC FRIEND,

Ocker Hill, Tipton, Staffordshire.

1.—A New Yorkshire Worm.

Fridericia striata (Lev.). During a flying visit to Bradford in January, I took the opportunity to spend a few minutes at Apperley, where, in former years, I had frequently observed a large variety of terrestrial and aquatic annelids. The season of the year was unfavourable, as most of the worms had gone into winter quarters, but I was able not only to obtain some specimens of the true Tubifex (*Tubifex rivulorum* Lam.), but also to identify a new British species of white worm. This proves to be the striate Enchytræid *Fridericia striata* (Lev.), first described in 1883 by Levinsen under the name *Enchytræus striatus*, and placed under *Fridericia* by Michaelsen in 1889. It was then known only as a Continental worm, its homes being Denmark and Germany. In 1896, however, Dr. H. Ude, of Hanover, published an account of some worms collected by Dr. Michaelsen during his foreign travels, and among them he found sundry specimens which he did not hesitate to place under this heading. They were from three different stations in Monte Video, and from Lota, in South America. It would be strange, therefore, if the worm were absent from the British fauna. The worm is about ⅜ inch in length, of a dull, somewhat opaque grey colour, but showing a pure opaque white where the eggs are located in the neighbourhood of the girdle segments. There are 45 to 50 segments in the body, and the setæ are in four bundles, each of which consists of six to eight bristles. They are arranged according to the usual pattern in this genus. I have not detected any chlorophyll bodies in the skin, but in the front segments there are vacuoles arranged in irregular rows, usually three in each segment, which might possibly at other seasons of the year show a different appearance. Possibly, if Levinsen's statement is accurate, the chlorophyll is accumulated in summer, and used up in winter. Should this assumption be correct, we have a very interesting new field for research. Chlorophyll does occur in *Anachæta*—a member of the same family. See Beddard's 'Monograph of Oligochæta,' p. 354. One of the most striking features, so far as I have yet observed, is the enlargement of the intestine in segment 9, so as to give it the appearance of a gizzard. I regret that, though I have several

of the memoirs of Dr. Michaelsen and Ude, I have not been able to consult their diagnoses of this species, so that I cannot tell whether or not this point has been noticed in the Continental forms. Perhaps, when the spring arrives, some collector would send me more material from Apperley, to enable me to make a more complete examination.

2.—Worms New to Science.

The pressure of work has prevented me hitherto compiling and publishing a list of the new species of aquatic and microscopic worms, upon which I have been working at intervals during the past two or three years. There are two, however, which are of such interest that I give a brief preliminary account of them, in order to stimulate research.

(1) ***Limnodrilus wordsworthianus*** Friend. This species was found by me at Old Carlisle, near Wigton, Cumberland. It has all the characteristics of a *Limnodrilus*, and comes very near to *L. hoffmeisteri* Clap. It is found in mud at the roots of water plants, and looks like a *Tubifex* or *Stylodrilus*. When taken it coils up like the former, but under the microscope is quickly seen to differ from each of the foregoing. From *Tubifex* it is at once distinguished by the absence of capilliform setæ, while it lacks the characteristic penis of *Stylodrilus*, and has more than two setæ in the bundles of the anterior segments. It is two to three inches in length, but owing to its habit of coiling up when under observation, it is very difficult to obtain exact measurements without killing the specimens. The blood-tufts in the epidermis are fully developed. The head is pointed, the prostomium being about the length of the first segment. The setæ are all uncinate, four to six in each bundle anteriorly, two in the posterior portion of the body. The chitinous penis-sheaths are trumpet-shaped, and about four times as long as broad. The brain is rounded off behind, a kind of squared circle; but in the living worm the appearance changes with every convolution. The nephridia in the front part of the body are covered with vesicular cells. Delicate papillæ cover the prostomium, and extend to the peristomium. This, I believe, is a feature not recorded for other species.

(2) ***Marionia appendiculata*** Friend. A worm of peculiar interest found in backwash at Askham, near Furness. Its most striking peculiarity, and one which is, so far as I am aware, unique in this group of annelids, is the presence of a pair of beautiful ciliated rosettes, connected with and forming the

external orifices of the spermathecæ. They are found on the ventral sides of the body between segments 4 and 5, and cannot be overlooked. Another point of interest is the presence of two distinct forms of lymph corpuscles. In this respect it comes near to *M. crassa* (Clap.), and it is possible that eventually these two species will serve as the basis of a new genus. At present they do not perfectly fit in either with *Pachydrilus* or *Marionia*. I hope to throw more light thereon during the present year.

NOTE—GEOLOGY.

Erratic Boulder in Cheshire.—One hundred and fifty yards or so south of Mr. Williamson's farmstead at Old Alderley, at an angle of the lane leading to the house, is a large, sub-angular block of granite (?), much too large to have been brought there from any distance, one would think. Would it not be well that it should be inspected and measured, and a sample bit taken for microscopical examination? Probably it has been moved out of an adjacent field, but I had not then (10th Nov. 1897) time to make enquiry.—JAMES EARDLEY MASON, Norfolk House, Lincoln, 2nd Feb. 1898.

[Will some Cheshire or Lancashire glacialist examine, and report results to this journal?—EDS. NAT.]

NOTE—FUNGI.

A New Lincolnshire Fungus.—At a meeting of the Nottingham Naturalists' Society held on January 11th, the Vice-President (Mr. W. Stafford, M.B.) exhibited specimens of a very handsome cup-shaped fungus obtained by him a few days previously at Colsterworth, near Grantham (Nat. Hist. Div. 15 S.). On the following day I sent these specimens to Mr. Carleton Rea, M.A., Secretary of the British Mycological Society, who identified the species as *Otidea cochleata* Fackl. As it is not included in Mr. Arnold Lees' 'Outline Flora of Lincolnshire,' the occurrence of this fungus in the county is perhaps worth recording.—J. W. CARR, M.A., F.L.S., University College, Nottingham, 25th Jan. 1898.

NOTE—MOLLUSCA.

Occurrence of *Achatina acicula* in Lincolnshire.—About three years ago a quantity of sand, soil and gravel was removed from the allotments near the Lincoln hospital to the grounds of Mr. Ramsden, the manager of the Greetwell Iron Works, for the purpose of gravelling the drive. The mixed character of the gravels necessitated them being sifted, and a small heap of the rejectamenta, consisting of a mixture of calcareous loam, oolitic and liassic debris and sand still remains in front of the house undisturbed. It is essentially arenaceous, the proportion of carbonate of lime to sand being as 3 : 7.

While engaged in examining with the microscope the finer constituents of the heap I found several specimens of *Achatina acicula*, three of which I submitted for identification to Mr. W. Denison Roebuck. They are very small, the largest measuring 2 mm. and the smallest 1 mm. The position in which they were found is situate on the Oolitic plateau at a height of about 150 feet above the bed of the Witham valley. Mr. Roebuck kindly determined the specimens, and as he remarks that this is the first time that *Achatina* has been recorded for Lincolnshire, this note may not be without some interest to Lincolnshire conchologists.—J. H. COOKE, 18th Jan. 1898.

[The specimens submitted for identification were but fragments, the two largest consisting of but the two lowest whorls, and the smallest of but one.—W.D.R.]

NOTE—COLEOPTERA.

***Monochammus sutor* near Barnsley.**—A female of *M. sutor* L. in very fair condition was brought to me on 13th August last. It had been taken by one of the joiners engaged in sawing up timber for props at the Carlton Main Colliery, near Barnsley. Of course, like most of our rarer longicorns, it is doubtless an importation, but deserves a record nevertheless. —E. G. BAYFORD, 2, Rockingham Street, Barnsley, 17th Feb. 1898.

NOTES—ORNITHOLOGY.

Kingfishers near Huddersfield.—Noticing Mr. Porritt's note on the occurrence of the Kingfisher (*Alcedo ispida*) at Huddersfield, it may be of interest to record that I possess a specimen of the bird from that neighbourhood, given to me by the late Mr. John Walker of the same town; and that although the bird in question had been killed some twenty-five years ago, it was even then looked upon as a rare bird for the district.—J. BACKHOUSE, F.L.S., F.Z.S., M.B.O.U., Harrogate, 14th January 1898.

Bird-Protection at Walney Island and Barrow-in-Furness.—After some months of effort, a few energetic men have succeeded in obtaining from the Home Secretary orders that the Wild Birds Protection Act, 1880, is to apply to certain species within the area of the borough of Barrow-in-Furness, in the same manner as if those species were included in the Schedule of the Act; and further, that from the 1st February 1898, 'The taking or destroying of the eggs of any species of wild birds is prohibited within the Island of Walney for a period of five years; and there is a similar prohibition during the existence of the order in reference to a selected list of birds in the other parts of the borough.' The Town Council of Barrow have had good advisers—Mr. Durnford, of Barnsley ('Birds of Walney,' 1883), Mr. H. Gaythorpe, of Barrow, and Mr. H. G. Pearson. It would be unfair, perhaps, to particularise, but I believe it is due to one of these gentlemen that any small interest which the local authorities felt in the matter, has been used in the furtherance of the object he had at heart.—S. L. PETTY, Ulverston, 31st Jan. 1898.

Kingfisher in Lake Lancashire.—In answer to this inquiry I have the following notes to offer. The Kingfisher (*Alcedo ispida*) is rare in the Esthwaite Valley, and I never but once saw it (10th March 1887) at Pool Bridge, above the lake; while it was reported to me as seen at Ees Bridge, below the lake, in the summer (I think) of 1894. Also I was told of it at Greythwaite about the same time, and earlier, in 1885, at Newby Bridge, frequently. Indeed, I always supposed that it would nest on the streams between the lakes and the sea. When the stationmaster at Kents Bank showed me in 1892 a stuffed specimen, he said that birds came down to Morecambe Bay in hard frosts, when the streams were frozen. On Lake Windermere the Kingfisher is, though rare, certainly present on the Lancashire shore. On 27th June 1894, I saw it on Blelham Pool, the quiet outflow of Blelham Tarn to the lake, and think this a very likely spot for it breeding. My friends see it about the boathouse at Balla Wray pretty often. Last year it was frequently seen about Bardhouse Mouth, which is the local name for the united waters of Rothay and Brathay; and it appears to have nested once, if not oftener, in a rat-run too deep for boys' intrusion on the Rothay bank, close to the meeting. Higher up the Rothay, it had, years ago, I am told, a nest-hole in the Fox How grounds, from which, however, it was flooded out. It seemed to succeed with a hole lower down the stream about the year 1885, and may possibly have done so since. Twice last year it was seen from the Fox How grounds, and it alighted on a fisherman's rod in the autumn. It seems rarely, if ever, to push higher up the Rothay or to reach Rydal Water. Though the river runs past this garden in full view of the windows, I have never myself seen it, nor has the game-keeper of the Rydal estates ever seen it hereabouts either. But the Rothay is, of course, on both shores a Westmorland stream.—MARY L. ARMITT, Rydal Cottage, Ambleside, 15th Dec. 1897.

LINCOLNSHIRE BOULDERS.

JOHN H. COOKE, F.G.S., F.L.S., etc.

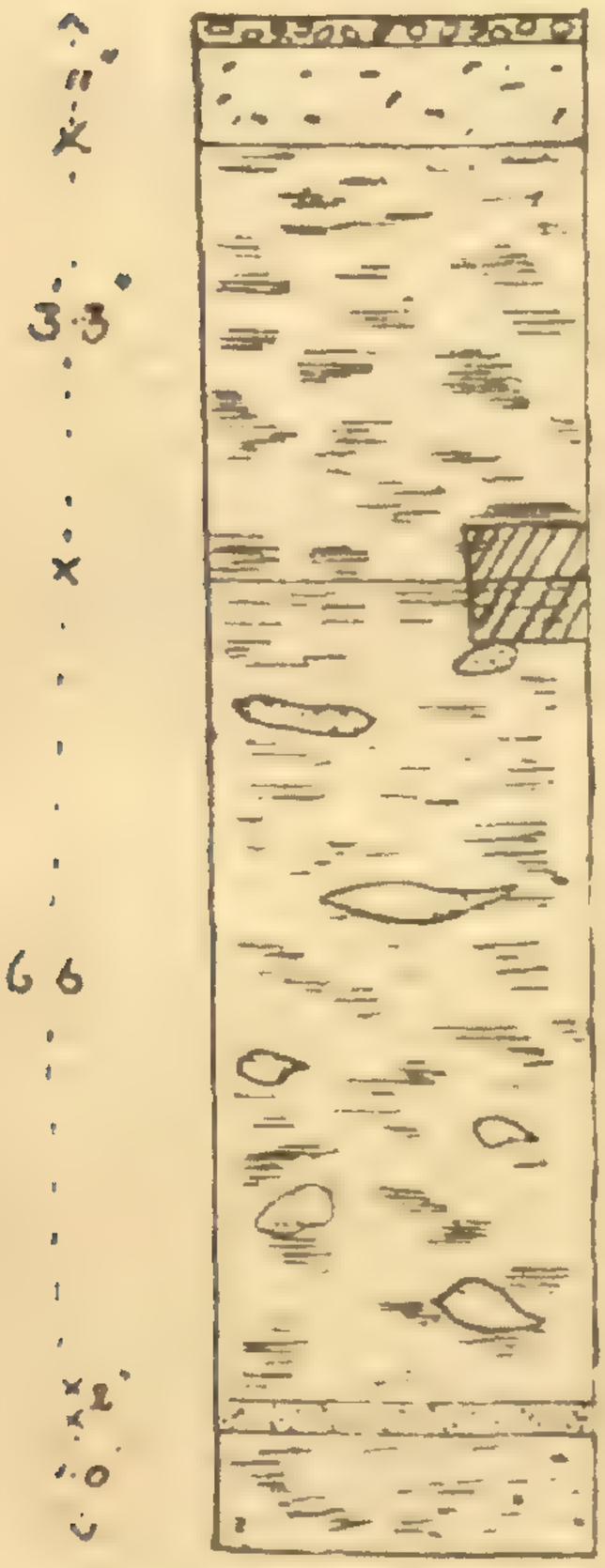
FOURTH PAPER.

For previous papers see 'The Naturalist,' 1897, pp. 103-105; 1897, pp. 283-284; and 1898, pp. 17-20.

LOUTH.—*Eastgate.*

Dolerite. 43 × 31 × 18 inches. R. Dominant rock in locality, Hessle Clay.

This boulder was found whilst excavating for a drain near the Swan Hotel, in Eastgate, at a point which is about 70 feet above O.D. Its lower portions were embedded in Hessle Clay, while the upper were overlain with about 3 feet of made ground. It lay in situ, with its longer axis pointing E. and W. The sequence, character, and thickness of the deposits, as well as the relative position of the boulder, are shown in the accompanying section. In shape the boulder is irregularly oblate, one end being well rounded, the other somewhat sub-angular. As it lay in the course of the projected drain, it was removed, and is now to be seen in the corporation yard, James' Street. A close examination of its surfaces fails to reveal any traces of striæ, but evidences of extensive surface corrosion and of incipient fractures are strongly marked on the upper portions,



Section in Eastgate, Louth, showing position of Boulder. For the measurements I am indebted to the courtesy of Mr. G. H. Allison, the town surveyor.

thus showing that, prior to the making of the street, it must have lain for a long period in the one position with its upper surfaces exposed to weather influences.

HALLINGTON BECK.

Sandstone (fine-grained, *not* Spilsby). 45 × 27 × 24 inches. S.A. It lies in the bed of the brook, near the bridge.

TATHWELL.

Basalt. 28 × 18 × ? inches. R. Corner of chapel. Hessle Clay in valley.

Basalt. 18 × 15 × 12 inches. S.A. and well striated.

In this list it will be observed that several of the rocks recorded are ice-marked. Unfortunately, however, none of the marked rocks are in situ; and, therefore, observations on the direction of the striæ for the purpose of estimating the position of the avenues along which the great glacial movements have passed, would be valueless.

SOUTH RESTON.

Basalt. Seven boulders averaging 1 foot in diameter. Some well striated. On the glebe farm. Obtained from the adjoining Hessle Clay pit.

Granite. 1 foot in diameter. R. Glebe farm.

Basalt. Two boulders at the stile between Reston and station.

WELTON-LE-WOLD.

Basalt. 18 × 18 × 9 inches. R. and striated. Schoolhouse garden.

,, 42 × 24 × 24 inches. A. Chatterton's farm. Purple clays.

Mica schist. 24 × 24 × ? inches R. Chatterton's farm. Purple clays.

Basalt. 21 × 12 × 12 inches. A. Chatterton's farm. Purple clays.

Basalt. 32 × 20 × 18 inches. S.A. In village near cross roads.

GRINGLEY-ON-HILL.

Limestone (carb. ?). 35 × 23 × 18 inches. Corner Spencer's Lane. Esker sands.

Quartzite. 30 × 24 × 12 inches. R. Top of Wood Lane.

Saccharoid Quartzite. 16 × 15 × 6 inches. R. Hartz's farm.

This farm has a great quantity of rounded quartzite boulders of over 1 foot in diameter.

Quartzite 36 × 30 × ? inches. R. In drain near Hill's corner.
Quartzite. 18 × 12 × 12 inches. S.A. Gashouse corner.
Limestone (carb.?). 36 × 30 × 14 inches. Gashouse corner.
Quartzite. 30 × 20 × 18 inches. R. Primitive Chapel corner.
Sandstone (Trias). 48 × 23 × ? inches. A. Primitive Chapel corner.
Sandstone Trias. 18 × ? × ? inches. S.A. Primitive Chapel corner.

The banking of the roadway at this point contains large numbers of rounded quartzites, limestones, and sandstones of considerable size.

Quartzite. 24 × 18 × 12 inches. S.A. Crosshill.

Some care has to be exercised in discriminating the limestones, as there are many large blocks lying about the village that were brought many years ago from the ruins of Mattersey Abbey for the purpose of repairing Gringley Church.

CLAYWORTH.

Quartzite Carb. 41 × 29 × 25 inches. R. Was dug out of the glacial beds in a neighbouring field and has recently been built in the wall that surrounds the graveyard.

Specimens of the above boulders, as well as of those mentioned in previous papers, have been submitted to and are now in the possession of Prof. P. F. Kendall, of Leeds. Prof. Kendall notes that among the Basalts mentioned in this and the last paper there are none from the Cleveland Dyke. The quartzites appear to be carboniferous; the saccharoid quartzites are probably gannisters.

NOTE—MAMMALIA.

Seal in Morecambe Bay.—It may interest readers to know that a very fine Seal, said to be a young Greenland Seal (*Phoca grænlandica*) was caught in Morecambe Bay opposite Hest Bank, and about two miles out, by one of the fishermen. It was taken alive, but died shortly after. Its weight was about 50 lbs. There has only been one other caught right in the bay that I know of, and it was caught in the year 1863 at Arnside. It measured 4 ft. 9 in. in length and weighed 112 lbs.—EDWARD L. RANSOME, Hest Bank, Lancaster, 30th Dec. 1897.

[Mr. Thomas Southwell, F.Z.S., of Norwich, observes that it is very improbable that it should be a Greenland Seal, but if *really* a young one—that is not more than six months old—it would probably be a Grey Seal (*Halichærus gryphus*), for only that species reproduces in the late autumn. It would not, however, be safe to give an opinion without something more to go upon. There is no improbability in its being either *Phoca vitulina* or the Grey Seal.—ED. NAT.]

NOTE—GEOLOGY.

Boulders of Shap Granite at Morecambe Bay.—In reference to the Boulders mentioned in your December issue, I have found great numbers of small ones, but only a few of any size, the largest of them being 16 in. long, 28 in. in circumference, and weighing 52½ lbs. It was washed out by the last storm when the tide washed right against the bank in which it was buried. It was in one of the large boulder clay banks upon which Hest Bank is situated.

There are also some very fine Carboniferous Limestone Boulders, one of them being the largest, 'I should think,' in this part. It measures about 36 ft. in circumference by 10 ft. high, and I should think weighs between 30 and 40 tons.

Some of the stones are beautifully marked by the ice, the tops of some being cut quite smooth, while the underside remains rough and in the natural state.—EDWARD L. RANSOME, Hest Bank, Lancaster, 30th Dec. 1897.

NOTE—TRICHOPTERA.

***Nothochrysa fulviceps* a Yorkshire Insect.**—Of this species it was believed the only recent British specimen was the one in my own collection, taken at Aythorpe, Lincolnshire, by Mr. F. Altofts in June 1889 (see Nat., 1896, p. 131). My friend Mr. R. McLachlan wrote me recently, however, that among the two or three ancient examples which represent the species in his cabinet, Mr. C. A. Briggs had the day previously detected 'one with a *gold pin*,' proving at once that, unless it had been reset, *that* specimen could not be so old as had been believed. Mr. McLachlan at once looked up the reference, which had been quite lost sight of, and found that he 'received it in August 1866, from J. Batty, by whom it was taken at Sheffield in that year.' So it turns out that *only* an interval of twenty-three years had occurred without any record of the species in Britain, a considerably shorter period than was supposed.—GEO. T. PORRITT, Crosland Hall, Huddersfield, 4th February 1898.

NOTES AND NEWS.

Another evidence of the continued activity of Mr. Edgar R. Waite, F.L.S., in herpetological work is afforded by a reprint of his paper on 'A New Blind Snake [*Typhlops suboccularis* sp. nov.] from the Duke of York Island,' published in the Records of the Australian Museum, Vol. 3, No. 3, Nov. 1897.

From Messrs. Henry Crowther, F.R.M.S., and Richard Reynolds, F.C.S., we have the reprint of a paper read by them at the Leeds Congress of the Sanitary Institute last year, in which they deal with 'A Decade of Sunshine Observations in Leeds,' in which we are glad to notice they can note a slight improvement in the records for the centre of the city, spite of increased population, and presumably due to more effective smoke-consumption in Leeds manufactories.

Messrs. Britten and Boulger announce as in preparation a Supplement to their admirable *Biographical Index of British and Irish Botanists*, 1893. It will contain, in addition to the notices of the botanists who have died in the five years interval, the names of those who for various causes were omitted in the *Index*. The compilers have still to regret the loss entailed on the work. It has always been somewhat of a mystery to us to account for so good a book being so little known, and as there is nothing in English to which we can turn in place of it, we venture to hope that all our readers who are interested in the biographical side of botany will aid in making the Supplement as complete as possible by communicating any omissions in, or addition to, the *Index*, to Mr. James Britten, 126, Kennington Park Road, London, S.E.

NOTTINGHAMSHIRE DIPTERA: A PRELIMINARY LIST.

PERCY H. GRIMSHAW, F.E.S.,

Natural History Department, Edinburgh Museum of Science and Art.

The following list of Diptera, comprising over 240 species, is mainly the result of the zeal of my friend the Rev. Alfred Thornley, M.A., of South Leverton, who during the past four years has paid considerable attention to this much-neglected order of insects, and who has very kindly submitted the greater part of his collection to me for examination. From the large number of specimens examined Mr. Thornley has very generously allowed me to select for the Edinburgh Museum any that I deemed of use, and accordingly, our collections have been enriched by his kindness to the extent of nearly 500 specimens. The majority of Mr. Thornley's Nottinghamshire collecting was done in a small area, including the localities of South Leverton and Treswell.

Mr. Thornley's Nottinghamshire List has been increased by some very interesting captures in Sherwood Forest, chiefly in 1892, by Messrs. R. C. Bradley and Colbran J. Wainwright and friends. These are acknowledged in the proper place. It is hoped that the present contribution, the result of the labours of these gentlemen, may serve as a foundation upon which to build at some future date a more or less complete Dipterous fauna of the county of Nottingham. A few critical notes have been added at the end of the list, and the species dealt with in these notes are marked with an asterisk in the list.

It only remains for me now to tender my thanks to Messrs. G. H. Verrall and R. H. Meade for assistance in identifying a dozen species about which I had some doubt, and also to Mr. Thornley for the great trouble he has taken in incorporating for me the numerous records of Messrs. Bradley, Wainwright, and others.

Fam. MYCETOPHILIDÆ.

Glaphyroptera fascipennis Mg. South Leverton, one ♀, 1896; also a ♀ in 1894 (Thornley).

Fam. BIBIONIDÆ.

Dilophus febrilis L. South Leverton, three ♂s, 1896; also two ♂s in 1894 (Thornley).

Bibio marci L. South Leverton, two ♂s and one ♀, May 1896 (Thornley).

Bibio varipes Mg. South Leverton, one ♀, May 1896 (Thornley).

Bibio johannis L. South Leverton, one ♂ and one ♀, no date; one ♂ and two ♀s, May 1896 (Thornley).

Fam. CULICIDÆ.

Culex pipiens L. South Leverton, two ♂s and three ♀s, 1896 (Thornley).

Fam. PTYCHOPTERIDÆ.

Ptychoptera contaminata L. South Leverton, one ♀, May 1896 (Thornley).

Ptychoptera albimana Fab. South Leverton, ♂ and ♀, 1896 (Thornley).

Fam. LIMNOBIDÆ.

Limnobia nubeculosa Mg. South Leverton, one ♀, 1896 (Thornley).

Limnobia nitida Ver. Sherwood Forest, 6th June 1892 (R. C. Bradley).

Dicranomyia chorea Mg. South Leverton, 2 ♂s and one ♀, 1896 (Thornley).

Limnophila ferruginea Mg. Sherwood Forest (R. C. Bradley).

Rhypholophus lineatus Mg. South Leverton, ♀, May 1896 (Thornley).

Rhypholophus nodulosus Mcq. South Leverton, ♂, 1894 (Thornley).

Fam. TIPULIDÆ.

Pachyrrhina maculosa Mg. South Leverton, ♂ and ♀, May 1896, and ♀, June 1896 (Thornley).

Pachyrrhina crocata L. Sherwood Forest, 'common on furze,' 2nd June 1892 (R. C. Bradley and C. J. Wainwright, E.M.M., Nov. 1892, p. 289).

Tipula lunata L. South Leverton, ♂, 1896 (Thornley).

Tipula vernalis Mg. South Leverton, two ♂s, May 1896 (Thornley).

Tipula vittata Mg. South Leverton, ♂, May 1896 (Thornley).

Tipula gigantea Schrk. South Leverton, ♀, 1896 (Thornley).

Tipula ochracea Mg. South Leverton, ♂, June 1896 (Thornley).

Xiphura nigricornis Mg. Sherwood Forest, ♀ (R. C. Bradley, E.M.M., Nov. 1892).

Xiphura atrata L. Sherwood Forest, June 1889 (C. J. Wainwright).

Dictenidia bimaculata L. Sherwood Forest, June 1889 (C. J. Wainwright).

Fam. RHYPHIDÆ.

Rhyphus fenestralis Scop. South Leverton, one ♀, 1896 (Thornley).

Rhyphus punctatus Fab. South Leverton, ♂, 1894; ♂ and ♀, 1896 (Thornley).

Fam. STRATIOMYIDÆ.

Sargus cuprarius L. Treswell, one ♂, 8th September 1897 (Thornley).

Sargus nubeculosus Ztt. South Leverton, one ♂ and six ♀s, June 1896. Treswell Wood, one ♀, 14th July 1897 (Thornley).

Chloromyia formosa Scop. South Leverton, two ♂s and four ♀s, June 1896; one ♂, July 1896. Sutton, Retford, one ♀, 1896 (Thornley).

Microchrysa polita L. South Leverton, two ♀s, 1894; one ♂ and one ♀, May 1896; four ♀s, June 1896 (Thornley).

Microchrysa flavicornis Mg. South Leverton, one ♂ and one ♀, May 1896 (Thornley).

Beris vallata Forst. South Leverton, one ♀, July 1897 (Thornley).

Fam. XYLOPHAGIDÆ.

Xylophagus ater F. Sherwood Forest, one ♀, 7th June 1892 (R. C. Bradley).

Fam. TABANIDÆ.

Hæmatopota pluvialis L. South Leverton, two ♀s, July 1896. Treswell Wood (Thornley).

Tabanus bromius L. Treswell Wood, one ♀, 14th July, 1897. South Leverton, one ♀, July 1897 (Thornley).

Chrysops cæcutiens L. South Leverton, one ♀, June 1896; one ♂, July 1897. Treswell Wood, July 1897 (Thornley).

Fam. LEPTIDÆ.

Leptis scolopacea L. South Leverton, six ♂s, June 1896 (Thornley).

Leptis tringaria L. Treswell Wood, one ♀, 14th July, 1897 (Thornley).

Chrysopilus aureus Mg. Sutton, Retford, one ♂, 1896. Treswell Wood, July 1897 (Thornley).

Fam. ASILIDÆ.

Dioctria rufipes DeG. South Leverton, 3 ♂s and two ♀s, June 1896 (Thornley). Sherwood Forest, 1892 (C. J. Wainwright).

Dioctria œlandica L. Sherwood Forest (C. J. Wainwright).

****Dioctria linearis*** Fab. Treswell Wood, one specimen each on 10th, 21st and 30th July 1897 (Thornley).

Laphria marginata L. Treswell Wood, one ♂ and one ♀, 10th July; three ♂s and two ♀s, 14th July, 1897 (Thornley).

Neoitamus cyanurus Lw. Sherwood Forest, 'not uncommon,' June 1889 (C. J. Wainwright).

Fam. THEREVIDÆ.

Thereva nobilitata Fab. Sherwood Forest (C. J. Wainwright).

Fam. EMPIDÆ.

Rhamphomyia sulcata Fln. South Leverton, four ♂s and eight ♀s, May 1896. Retford district, one ♂, May 1896 (Thornley).

Rhamphomyia flava Fln. South Leverton, one ♀, July 1897 (Thornley).

Empis tessellata Fab. South Leverton, three ♀s, June 1896 (Thornley). Sherwood Forest, 1892 (C. J. Wainwright).

Empis livida L. South Leverton, two ♂s and two ♀s, July 1896, one ♂ and one ♀ July 1897. Grove, one ♂, June 1896 (Thornley).

Empis opaca Fab. South Leverton, one ♀, May 1896 (Thornley).

Empis trigramma Mg. South Leverton, one ♀, 1896, and three ♀s, May 1896 (Thornley).

Empis chioptera Fln. South Leverton, two ♂s, May 1896 (Thornley).

Pachymeria femorata Fab. South Leverton, one ♀, May 1896 (Thornley).

Hilara maura Fab. South Leverton, three ♂s, May 1896 (Thornley).

Ocydromia glabricula Fln. South Leverton, one ♂ and one ♀, July 1897 (Thornley).

Fam. DOLICHOPODIDÆ.

Dolichopus æneus DeG. South Leverton, one ♀, May 1896; three ♂s and one ♀, June 1896 (Thornley).

Scellus notatus Fab. Treswell Wood, one ♀, 21st July 1897 (Thornley).

Fam. PIPUNCULIDÆ.

Pipunculus campestris Ltr. South Leverton, one ♂, 1894 (Thornley).

Fam. SYRPHIDÆ.

****Pipiza noctiluca*** L. South Leverton, one ♀, May 1896; six ♂s and five ♀s, May 1897 (Thornley).

Pipiza lugubris Fab. Treswell Wood, one ♀, 30th July 1897 (Thornley).

Chrysogaster metallina Fab. South Leverton, one ♀, June 1896 (Thornley).

****Chrysogaster hirtella*** Lw. (= ***macquarti*** Lw. of British lists). South Leverton, one ♂, July 1897 (Thornley).

Chrysogaster splendens Mg. South Leverton, one ♀, July 1896; two ♂s and one ♀, July 1897. Treswell Wood, one ♂, 14th July 1897 (Thornley).

Chilosia grossa Fln. South Leverton, one ♀, 1st April 1896 (Thornley). Retford, one ♂, 1896 (Stephen Pegler).

Chilosia flavimana Mg. South Leverton, one ♀, May 1896; three ♂s and one ♀, May 1897. Treswell Wood, one ♀, 14th July 1897 (Thornley).

Chilosia scutellata Fln. Sherwood Forest (C. J. Wainwright).

Chilosia variabilis Pz. South Leverton, one ♀, June 1896 (Thornley).

Leucozona lucorum L. South Leverton, one ♂ and one ♀, May 1897. Treswell Wood, July 1897 (Thornley).

Melanostoma ambiguum Fln. South Leverton, one ♂, April 1897; three ♂s and two ♀s, May 1897 (Thornley).

****Melanostoma mellinum*** L. South Leverton, four ♀s, 1894; three ♂s and two ♀s, May 1896 (Thornley).

Pyrophæna ocymi Fab. South Leverton, one ♀, September 1897 (Thornley).

Platychirus manicatus Mg. South Leverton, one ♂ and two ♀s, 1894; four ♂s and two ♀s, May 1896; one ♂, June 1896; one ♀, September 1896 (Thornley). Sherwood Forest (C. J. Wainwright).

Platychirus albimanus Fab. South Leverton, two ♀s, 1894; one ♂ and one ♀, May 1896; one ♀, June 1896; three ♂s, May 1897 (Thornley).

Platychirus peltatus Mg. South Leverton, one ♂ and one ♀, 1894; one ♂, May 1896; two ♀s, September 1896; one ♂, May 1897 (Thornley). Sherwood Forest (C. J. Wainwright).

Platychirus scutatus Mg. South Leverton, two ♂s and three ♀s, May 1896; one ♀, June 1896; three ♀s, May 1897. Retford district, one ♂, May 1896. Treswell, one ♀, 8th September 1897 (Thornley).

Platychirus scambus Staeg. South Leverton, four ♂s and one ♀, May 1896 (Thornley).

Platychirus clypeatus Mg. South Leverton, September 1897; common (Thornley).

Platychirus angustatus Ztt. South Leverton, two ♀s, 3rd September 1897. Treswell, one ♀, 8th September 1897 (Thornley).

Syrphus lasiophthalmus Ztt. South Leverton, one ♀, June 1897 (Thornley).

Syrphus umbellatarum Fab. South Leverton, two ♂s and two ♀s, 1894; one ♂, August 1897 (Thornley).

Syrphus maculicornis Ztt. South Leverton, three ♀s, June 1897, and one ♂, July 1897 (Thornley). Sherwood Forest (C. J. Wainwright, recorded as *S. auricollis* var. *maculicornis*).

Syrphus balteatus DeG. South Leverton; Treswell, Retford (Thornley).

Syrphus bifasciatus Fab. South Leverton, seven ♂s and two ♀s, May 1896 (Thornley).

Syrphus luniger Mg. South Leverton, one ♂ and one ♀, 1896; two ♀s, May 1896; three ♀s, June 1896; one ♀, September 1896; one ♀, June 1897 (Thornley).

Syrphus corollæ Fab. South Leverton, one ♂, 1894; one ♂, May 1897; two ♂s, August 1897; two ♂s, 3rd September 1897; two ♂s, September 1897. Treswell, two ♂s and two ♀s, 8th September 1897 (Thornley).

Syrphus cinctellus Ztt. Sherwood Forest (C. J. Wainwright).

Syrphus lineola. 'I introduced this species to the British list on the strength of a specimen I took in Sherwood, 6th June 1892.'—C. J. Wainwright.

Syrphus tricinctus Fln. Sherwood Forest (C. J. Wainwright).

Syrphus venustus Mg. Sherwood Forest (C. J. Wainwright).

Syrphus latifasciatus Mcq. South Leverton, one ♀, May 1897; one ♀, June 1897 (Thornley).

Syrphus annulatus Ztt. Sherwood Forest (C. J. Wainwright).

Syrphus topiarius Mg. Sherwood Forest (C. J. Wainwright).

****Syrphus ribesii*** L. South Leverton, two ♂s and one ♀, 1896; one ♀, June 1896; two ♀s, June 1897 (Thornley).

Syrphus lunulatus Mg. South Leverton, one ♂, June 1896; one ♂, May 1897; one ♂ and two ♀s, June 1897 (Thornley). Sherwood Forest (C. J. Wainwright).

Syrphus albostriatus Fln. South Leverton, one ♂ and one ♀, May 1896; one ♀, June 1897; one ♀, July 1897 (Thornley). Sherwood Forest (C. J. Wainwright).

Syrphus laternarius Müll. Treswell Wood, one ♀, 21st July 1897; one ♀, 30th July 1897 (Thornley).

Syrphus quadrilunulatus Schum. Sherwood Forest (C. J. Wainwright).

Catabomba pyrastri L. South Leverton, one ♀, 1894; one ♂, June 1896 (Thornley).

Sphærophoria scripta L. South Leverton, nine ♂s and ten ♀s, 1897; two ♂s and one ♀, August 1897 (Thornley).

Sphærophoria picta Mg. South Leverton, seven ♂s and seven ♀s, 1897; one ♂ and one ♀, July 1897; one ♂, August 1897 (Thornley).

Sphærophoria nitidicollis Ztt. South Leverton, one ♂, May 1896; one ♂ and one ♀, 1897 (Thornley).

Baccha elongata Fab. South Leverton, three ♀s, June 1896 (Thornley).

Ascia podagrica Fab. South Leverton, four, 1896, and one, May 1896 (Thornley).

Rhingia rostrata L. South Leverton, two ♂s, 1896; one ♀, May 1896; one ♀, June 1896 (Thornley).

Volucella bombylans L. Sutton, Retford, one ♀, 1896. Treswell Wood, one ♀, 10th July 1897 (Thornley).

Volucella pellucens L. South Leverton, one ♂, June 1896. Treswell, 1897 (Thornley).

Arctophila mussitans F. South Leverton, two ♂s and two ♀s, June 1896; one ♂, May 1897 (Thornley). (Has occurred every June for the last four or five years in my garden.—A.T.)

Eristalis sepulchralis L. South Leverton, one ♂ and one ♀, July 1897; one ♀, August 1897 (Thornley).

Eristalis tenax L. South Leverton, two ♂s, 1894; two ♂s and two ♀s, 1896; two ♂s, June 1896 (Thornley).

Eristalis intricarius L. South Leverton, one ♀, May 1896; one ♀, June 1896. Treswell, 1897 (Thornley).

Eristalis arbustorum L. South Leverton, one ♀, 1896; two ♂s and one ♀, June 1896 (Thornley). Sherwood Forest (C. J. Wainwright).

Eristalis pertinax Scop. South Leverton, two ♂s and one ♀, 1896; five ♂s and two ♀s, June 1896. Treswell Wood, two ♂s, 30th July 1897 (Thornley). Sherwood Forest (C. J. Wainwright).

Eristalis nemorum L. Treswell Wood, one ♀, 21st July 1897 (Thornley).

Eristalis horticola DeG. Treswell Wood, one ♀, 30th July 1897 (Thornley). Sherwood Forest (C. J. Wainwright).

Myiatropa florea L. South Leverton, one ♀, July 1897. Treswell Wood, two ♂s, 14th July 1897 (Thornley). Sherwood Forest, 1892 (R. C. Bradley and C. J. Wainwright).

Helophilus pendulus L. South Leverton, common (Thornley). Sherwood Forest (C. J. Wainwright).

Criorrhina ruficauda DeG. Sherwood Forest, 6th June 1892 (W. Harrison).

Criorrhina floccosa Mg. Sherwood Forest, 'common,' 6th June 1892 (R. C. Bradley and C. J. Wainwright).

Criorrhina berberina F. Sherwood Forest, June 1892 (R. C. Bradley and C. J. Wainright).

Brachypalpus bimaculatus Mcq. Sherwood Forest, 1892 (R. C. Bradley and C. J. Wainwright).

Xylota segnis L. Treswell Wood, 4 ♂s, 14th July 1897 (Thornley).

Xylota sylvarum L. Treswell Wood, one ♂ and one ♀, 10th July 1897; 3 ♀s and two ♀s, 14th July 1897 (Thornley).

Syritta pipiens L. South Leverton, two ♂s and two ♀s, 1896; three ♀s, May 1896 (Thornley).

Chrysochlamys cuprea Scop. Treswell Wood, one ♀, 14th July 1897 (Thornley).

****Chrysochlamys nigrifrons*** Egger. Treswell, one ♀, May 1897 (Thornley).

Chrysotoxum arcuatum L. Sherwood Forest (C. J. Wainwright).

Chrysotoxum sylvarum Mg. Sherwood Forest, 7th June 1892 (R. C. Bradley and C. J. Wainwright).

Chrysotoxum bicinctum L. South Leverton, one ♀, June 1896; ♂ and ♀, July 1897. Treswell Wood, three ♀s, July 1897 (Thornley).

Fam. CONOPIDÆ.

Conops quadrifasciatus DeG. South Leverton, one ♂ and one ♀, July 1896; one ♀, August 1897 (Thornley).

Myopa testacea L. South Leverton, five, May 1897 (Thornley).

Myopa buccata L. Sherwood Forest, 6th June 1892 (R. C. Bradley).

Fam. TACHINIDÆ.

Siphona geniculata DeG. South Leverton, one ♂ and one ♀, 1894; one ♂ and six ♀s, 1896 (Thornley).

Plagia ruralis Fln. Treswell, one ♂, 8th September 1897 (Thornley).

Echinomyia fera L. Sherwood Forest (C. J. Wainwright).

Nemoræa puparum Fab. Sherwood Forest, 5th June 1892 (R. C. Bradley).

****Olivieria rufomaculata*** DeG. South Leverton, one ♀, August 1897 (Thornley).

Exorista vulgaris Fln. South Leverton, four, May 1896 (Thornley).

Trixa œstroidea Dsv. Treswell Wood, one ♀, 10th July 1897 (Thornley).

Phorocera cilipeda Rnd. South Leverton, one ♀, May 1896 (Thornley).

****Phorocera incerta*** Meade. Treswell, two, May 1897 (Thornley).

Fortisia fœda Wdm. South Leverton, one ♀, July 1897 (Thornley).

Fam. DEXIDÆ.

Thelaira leucozona Pz. South Leverton, one ♂, July 1897. Treswell Wood, one ♂, 14th July 1897; one ♀, 21st July 1897 (Thornley).

Melania volvulus Fab. Treswell Wood, three, 21st July 1897 (Thornley).

Fam. SARCOPHAGIDÆ.

Sarcophaga carnaria L. South Leverton, two ♂s, 1896; three ♂s, May 1897 (Thornley).

Sarcophaga similis Meade. South Leverton, one ♂, 1896; Treswell Wood, one ♂, 14th July 1897 (Thornley).

Sarcophaga agricola Mg. South Leverton, two ♂s, May 1897; two ♂s, June 1897 (Thornley).

Cynomyia mortuorum L. South Leverton, one ♂, 1894 (Thornley).

Fam. MUSCIDÆ.

Lucilia cornicina Fab. South Leverton, one ♀, 1894; two ♂s and two ♀s, 1896 (Thornley).

Lucilia cæsar L. South Leverton, five ♀s, 1896 (Thornley).

Lucilia sericata Mg. South Leverton, two, 1894; one ♂, 1896 (Thornley).

**Calliphora azurea* Fln. Nottingham, one ♀, 1st October, 1897 (Thornley).

Calliphora erythrocephala Mg. South Leverton, one ♀, 1894; two ♂s and two ♀s, 1896 (Thornley).

Calliphora vomitoria L. South Leverton, one ♂ and one ♀, 1896 (Thornley).

Calliphora sepulchralis Mg. South Leverton, one ♀, 1894; one ♂, 1896 (Thornley).

Pollenia rudis Fab. South Leverton, one ♀, 1894; two ♂s, 1896 (Thornley).

Musca domestica L. South Leverton, two ♀s, 1894; one ♂ and one ♀, 1896 (Thornley).

Musca corvina Fab. South Leverton, one ♂, 1894; two ♂s, 1896; one ♂, June 1896 (Thornley).

Pyrellia lasiophthalma Mcq. South Leverton, one ♂, 1894; one ♂ and one ♀, May 1896 (Thornley).

Mesembrina meridiana L. South Leverton, one ♂, 1896 (Thornley).

Graphomyia maculata Scop. South Leverton, one ♀, 1894; four ♂s and one ♀, June 1896. Sutton, Retford, one ♀, 1896 (Thornley).

Morellia hortorum Fln. South Leverton, one ♀, 1894; one ♂ and five ♀s, 1896; two ♂s and one ♀, June 1896 (Thornley).

Cyrtoneura stabulans Fln. South Leverton, three ♂s, 1896 (Thornley).

Cyrtoneura pabulorum Fln. South Leverton, one ♂, 1894 (Thornley).

Cyrtoneura cæsia Mg. South Leverton, one ♂, 1896 (Thornley).

Myiospila meditabunda Fab. South Leverton, one ♂, May 1897 (Thornley).

Stomoxys calcitrans L. South Leverton, one ♂ and two ♀s, 1896 (Thornley).

Fam. ANTHOMYIDÆ.

Polietes lardaria Fab. South Leverton, one ♀, 1894; three ♀s, 1896; one ♀, September 1896 (Thornley).

Polietes albolineata Fln. South Leverton, two ♀s, 1894; one ♂ and one ♀, 1896 (Thornley).

Hyetodesia incana Wdm. South Leverton, one ♂, June 1896 (Thornley).

Hyetodesia lucorum Fln. South Leverton, two ♂s, 1894; three ♂s, 1896; one ♂, 8th April 1897 (Thornley).

Hyetodesia serva Mg. South Leverton, three ♀s, May 1897. This species was quite common last year, 1897 (Thornley).

Hyetodesia marmorata Ztt. South Leverton, one ♀, 1894; one ♀, 1896 (Thornley).

Hyetodesia umbratica Mg.. South Leverton, one ♂, May 1897 (Thornley).

Hyetodesia variabilis Fln. Treswell Wood, one ♂, 30th July 1897 (Thornley).

Hyetodesia læta Fln. South Leverton, one ♂ (very small specimen), May 1897 (Thornley).

Hyetodesia erratica Fln. South Leverton, one ♀, 1894; three ♀s, 1896 (Thornley).

Hyetodesia lasiophthalma Mcq. South Leverton, two ♂s, June 1897 (Thornley).

Hyetodesia scutellaris Fln. South Leverton, two ♀s, June 1896; one ♀, June 1897 (Thornley).

Mydæa urbana Mg. South Leverton, one ♀, 1894; two ♂s and one ♀, September 1896 (Thornley).

Mydæa impuncta Fln. South Leverton, one ♀, 1894; four ♂s and one ♀, 1896; three ♀s, September 1896 (Thornley).

Mydæa separata Mg. South Leverton, four ♀s, 3rd September 1897 (Thornley).

Spilogaster communis Dsv. South Leverton, one ♀, 1894 (Thornley).

Hydrotæa dentipes Fab. South Leverton, one ♂, 1894; four ♀s, September 1896 (Thornley).

Hydrotæa irritans Fln. South Leverton, four ♂s, June 1896 (Thornley).

Hydrotæa armipes Fln. South Leverton, one ♂, 1894 (Thornley).

Ophyra leucostoma Wdm. South Leverton, two ♂s, August 1897 (Thornley).

Drymeia hamata Fln. South Leverton, one ♂ and one ♀, August 1897 (Thornley).

Hydrophoria conica Wdm. Treswell Wood, one ♂ and one ♀, 14th July 1897; two ♀s, 21st July 1897 (Thornley).

Hylemyia variata Fln. South Leverton, two ♂s and three ♀s, 1896; one ♂, May 1896 (Thornley).

Hylemyia strigosa Fab. South Leverton, two ♀s, 1894; one ♂, May 1896 (Thornley).

Anthomyia pluvialis L. South Leverton, two ♂s, May 1897. Treswell Wood, one ♂, 21st July 1897 (Thornley).

Anthomyia radicum L. South Leverton, three ♂s, 1894; one ♂, May 1897 (Thornley).

Pegomyia betæ Curt. Recorded by Edward A. Fitch in the 'Entomologist' for January 1881, pp. 8-13, where the ravages of the larvæ in Notts are remarked upon.

Pegomyia rufipes Fln. South Leverton, one ♂, June 1897 (Thornley).

Pegomyia bicolor Wdm. South Leverton, one ♀, 1894. Treswell, one ♀, 8th September 1897 (Thornley).

Homalomyia hamata Mcq. South Leverton, one ♂, June 1897 (Thornley).

Homalomyia scalaris Fab. South Leverton, two ♀s, 1894; one ♂ and one ♀, 1896; one ♂, May 1896. Treswell, one ♂, 8th September 1897 (Thornley).

Homalomyia canicularis L. South Leverton, one ♂, 1894; one ♂ and two ♀s, 1896 (Thornley).

Azelia macquartii Staeg. South Leverton, one ♂, 1894 (Thornley).

Azelia zetterstedtii Rnd. South Leverton, two ♂s, 1896 (Thornley).

Azelia triquetra Wdm. South Leverton, one ♂, 1896 (Thornley).

Fam. CORDYLURIDÆ.

Norellia spinimana Fln. South Leverton, one, 1894; one ♂ and one ♀, May 1896 (Thornley).

Scatophaga lutaria F. South Leverton, one ♀, May 1896 (Thornley).

Scatophaga stercoraria L. South Leverton, one ♀, 1894; three ♂s and five ♀s, 1896; one ♀, June 1896 (Thornley).

Fam. HELOMYZIDÆ.

Tephrochlamys rufiventris Mg. South Leverton, one ♂, 1896; one ♀, May 1896 (Thornley).

Fam. SCIOMYZIDÆ.

Dryomyza anilis Fln. South Leverton, one ♀, 1896 (Thornley).

Dryomyza flaveola Fab. Retford, one ♂, May 1896; South Leverton, 1897 (Thornley).

Tetanocera sylvatica Mg. Treswell Wood, one ♀, 10th July 1897 (Thornley).

Limnia unguicornis Scop. South Leverton, one ♂ and one ♀, June 1897 (Thornley).

Limnia obliterata Fab. South Leverton, one ♀, 1894 (Thornley).

Elgiva albiseta Scop. South Leverton, one ♀, 1894 (Thornley).

Fam. PSILIDÆ.

Psila fimetaria L. South Leverton, two ♂s, May 1896 (Thornley).

Chyliza leptogaster Pz. Treswell Wood, one ♀, 21st July 1897 (Thornley).

Fam. MICROPEZIDÆ.

Calobata cibaria L. South Leverton, one ♀, June 1897 (Thornley).

Calobata petronella L. South Leverton, one ♂, June 1897 (Thornley).

Fam. ORTALIDÆ.

Ptilonota centralis Fab. South Leverton, one ♀, May 1896. Gamston, one ♂, May 1897 (Thornley).

Seoptera vibrans L. South Leverton, one ♀, July 1897 (Thornley).

Fam. TRYPETIDÆ.

Acidia heraclei L. South Leverton, two ♂s and one ♀, May 1896 (Thornley).

Spilographa zoë Mg. South Leverton, one ♂, 1894; one ♀, June 1897 (Thornley). Sherwood Forest (C. J. Wainwright).

Trypeta onotrophes Lw. South Leverton, one ♂, June 1897 (Thornley).

Tephritis bardanæ Schrk. Sherwood Forest (C. J. Wainwright).

Fam. LONCHÆIDÆ.

Lonchæa chorea Fab. South Leverton, one ♂, 1896; one ♂, May 1896; one ♂, June 1896 (Thornley).

Palloptera ustulata Fln. South Leverton, one ♀, September 1896 (Thornley).

Palloptera trimacula Mg. Sherwood Forest (C. J. Wainwright).

Palloptera arcuata Fln. South Leverton, one ♂ and two ♀s, May 1896 (Thornley).

Fam. SAPROMYZIDÆ.

Lauxania ænea Fln. South Leverton, one ♂ and one ♀, 1894 (Thornley).

Fam. OPOMYZIDÆ.

Opomyza germinationis L. South Leverton, two, 1894 (Thornley).

****Pelethophila flava*** L. South Leverton, one ♀, 1894 (Thornley).

Fam. SEPSIDÆ.

Sepsis violacea Mg. South Leverton, one ♂, 1894 (Thornley).

Sepsis cynipsea L. South Leverton, one ♂, 1894 (Thornley).

Nemopoda cylindrica Fab. South Leverton, three ♂s, 1894 (Thornley).

Fam. EPHYDRIDÆ.

Hydrellia griseola Fln. South Leverton, one, 1896 (Thornley).

Fam. DROSOPHILIDÆ.

Drosophila funebris Fab. South Leverton, one ♂ and one ♀, 1894; three ♂s, 1896 (Thornley).

Fam. CHLOROPIDÆ.

Chlorops tæniopus Mg. South Leverton, five, May 1896 (Thornley).

Chlorops speciosa Mg. Treswell Wood, one ♀, 21st July 1897 (Thornley).

Chlorops læta Mg. South Leverton, one, May 1896 (Thornley).

Fam. BORBORIDÆ.

Borborus nitidus Mg. South Leverton, two ♂s, 1896; one ♂, May 1896 (Thornley).

Borborus vitripennis Mg. South Leverton, one, 1894 (Thornley).

Sphærocera subsultans Fab. South Leverton, one, May 1896 (Thornley).

Fam. PHORIDÆ.

Trineura aterrima Fab. South Leverton, one, 1896 (Thornley).

Fam. HIPPOBOSCIDÆ.

Melophagus ovinus L. South Leverton, common on sheep (Thornley).

CRITICAL NOTES.

Dioctria linearis Fab. This species was, I believe, only for the first time recorded as British in 1896, when a single specimen was taken in the New Forest by Mr. F. C. Adams (see Ent. Mo. Mag., 1896, p. 233).

Pipiza noctiluca L. One of the females and two of the males have the wings quite clear, and only one of the males has any yellow spots on the abdomen. Nevertheless, I am convinced that all the specimens are of one species, as I cannot detect any other difference.

Chrysogaster hirtella Lw. In a note I have from Mr. Verrall he states that this species is the one long known to the British collector as *C. macquarti* Lw.

Melanostoma mellinum L. Amongst the specimens I have attributed to this species are some that seem to fit the description of *M. scalare* Fab., but the differences are so slight (colour of legs, etc.) that I do not regard them as distinct.

Syrphus ribesii L. I have included under this name several specimens which might pass as *S. vitripennis* Mg. After examining a large number of specimens of both forms I feel convinced that there is no specific difference between them. In the females the colour of the hind femora is usually regarded as a distinctive character, but as this seems to be the only difference, surely it is folly to separate them! According to Verrall the males are 'practically identical, but for a character at present unpublished and microscopical.' If they *are* distinct I leave it to this authority to make the matter clear.

Chrysochlamys nigrifrons Egger. Probably only a form of *C. cuprea* Scop.

Olivieria rufomaculata DeG. This is the species usually called *O. lateralis* Fab.

Phorocera incerta Meade. This is a new species, described by Meade in the Ent. Mo. Mag., 1897, p. 223. Its generic position seems to be doubtful, as pointed out by Austen in the Ent. Mo. Mag. for February of the present year. One of the specimens obtained by Mr. Thornley was seen and described by Mr. Meade, and is hence one of the types. Through the kindness of Mr. Thornley it is now the property of the Edinburgh Museum.

Calliphora azurea Fln. Mr. Thornley's specimen is the true *azurea*, and quite distinct from *grænlandica* Ztt.

Pelethophila flava L. This species is given in Part III. of Verrall's List, and hence required confirmation as a British insect.

NOTES—ORNITHOLOGY.

Green Sandpiper remaining through the Winter.—A small flock of half-a-dozen Green Sandpipers (*Helodromas ochropus*) have frequented the Great Cotes stream during the winter, and I am pleased to see three are left—the remainder having been killed at odd times by the 'must-kill-something' sportsmen, who never fail to fire at every wild creature they can approach.

It should be known that these very pretty and ornamental Sandpipers are totally worthless for food, and it is much to be regretted that they cannot be left in peace to gladden the eyes and ears of the naturalist. I cannot too strongly deprecate that cruel instinct which is depriving us of many objects which formerly used to add interest to a country walk.—JOHN CORDEAUX, Great Cotes House, R.S.O., Lincoln, 12th March 1898.

Kingfishers at Huddersfield.—I did not intend to imply, because personally I had never seen a Kingfisher (*Alcedo ispida*) in this district until the one on the ponds here in December last, that the bird is quite so rare with us as Mr. Backhouse seems to think. It is rare, no doubt, still a number have been seen, usually single specimens, on various of our ponds and streams during the past 20 or 30 years. Since writing my note (Nat., Jan. 1898), Mr. Heath, the stationmaster at Healey House (our little village station), has told me that some four or five years before I came here there were two Kingfishers for some time on the same ponds on which I saw my specimen, and that eventually one of them was shot by a gentleman who at the time was a constant visitor at this house.—GEO. T. PORRITT, Crosland Hall, Huddersfield, 1st March 1898.

Nesting of the Magpie and Long-eared Owl in Close Proximity to one another.—In reference to the paragraph in 'The Naturalist' for November last, on the discovery of a nest of the Kestrel in close proximity to that of a Long-eared Owl, perhaps it may be worth while to record a somewhat similar case which came under my notice a few years ago.

This occurred in a fir plantation at Scremerston, near Berwick, where I found a brood of young Long-eared Owls (*Asio otus*) in the old nest of a Magpie (*Pica pica*) in one tree, while in an adjoining tree was the new nest of the Magpie, containing eggs, the two nests being perhaps fifteen feet apart.

In this part of the country I have frequently noticed that the Magpie, when building in a spruce fir, as was the case in the instance above referred to, seems to be quite careless about completing the dome over its nest. A certain quantity of thorns, etc. (often very few indeed), are loosely placed over the nest, but no regularly-built roof, for defensive purposes, is apparently considered necessary. Possibly the thick foliage of the tree is relied upon as hiding the nest from observation, and the protection necessary when the large and conspicuous nest is built in a bare hard-wood tree is dispensed with.

We have no better checks upon the undue increase of the Woodpigeon (*Columba palumbus*) than the Magpie and the Long-eared Owl, both birds showing a strong partiality for the eggs and young of the pigeon. In the fir woods round here, where all these species breed, I have often seen the remains of young half-grown pigeons in the nest of the Owl, and the Magpie is most assiduous in her search after their eggs.—GEORGE BOLAM, Berwick-on-Tweed, 5th March 1898.

NOTE—FUNGI.

***Humaria roumegueri* near Harrogate: a Fungus New to Britain.**—I gathered specimens of *Humaria roumegueri* Sacc. on the 27th Feb. last growing on peaty ground in an old quarry at Crimple, near Harrogate. Mr. Massee, who has kindly identified it, states that the species is new to Britain, only the variety *carnosissimus* Phil. having previously been met with.—LLEWELLYN J. COCKS, Godolphin House, Harrogate, 20th March 1898.

THE YORKSHIRE NATURALISTS' UNION AT STAITHES.

Rev. JOHN HAWELL, M.A., F.G.S.,

President of the Cleveland Naturalists' Club; Vicar of Ingleby Greenhow.

Perhaps in the whole county of York it would not be possible to find a district more attractive from a naturalist's point of view than that which was selected for the 126th meeting of the Yorkshire Naturalists' Union on Bank Holiday Monday, 3rd August 1896. Whatever may be the special charms or particular natural features of an inland district, yet a coast excursion, which brings the student of nature into contact with the fauna and flora of both land and sea, is pretty certain to outvie in interest for him any local area remote from the shore. For the geologist in particular the selected district has very special attractions as having been made classic ground by Phillips, as affording unrivalled and ever-fresh sections of the lower Jurassic rocks, and as being a specially notable locality for the collection of their fossils, including some highly-interesting and well-preserved exuviæ of ancient life. The one indispensable requirement for such a gathering in such a place was favourable weather, even more necessary on the coast than elsewhere, and on this occasion the atmospheric conditions, even down to the minor point of temperature, could not have been better arranged.

The fishing village of Staithes had been adopted as the central focus for the excursions, and from the point of view of a naturalist there are few villages of greater interest. The English coast is fast becoming one big modern town, from which everything natural is ostracised, and where straight lines—which nature abhors, and from which she uses every possible device to liberate herself—fill the eye of the visitor in place of her ever-graceful curves. Staithes has now, unfortunately, got her railway station, and manifests indications of going to the bad like her kith and kin, only somewhat more so from want of that exuberant capital which tones down the asperities of modernism on some stretches of English sea-coast. She still, however, retains much of that picturesqueness which comes down from the time when each man built his own house in his own way. Only a few years ago the village remained almost exactly as it must have been when Cook, afterwards so highly distinguished as a navigator, lived here as a 'prentice lad.' Quite recently it

was a pleasant sight to see the procession of fisher-wives bringing home their water of an evening, with their 'skeels' gracefully poised upon their heads, but we are given to understand that the District Council has lately disestablished these picturesque processions by bringing the people pipe-water to their dwellings.

On Saturday, August 1st, some members of the Naturalists' Union found their way to Staithes, where they made the Station Hotel their head-quarters, and under the efficient guidance of Mr. Richard Barnes and Mr. Kenneth McLean, explored the locality. On the Monday a large accession of members arrived, and these separated into two or three parties, according to the special branches of natural history in which they were interested. The geological party was greatly strengthened by a number of members of the Yorkshire Geological and Polytechnic Society, which had been making Whitby the head-quarters of an excursion commencing on the previous Friday, and had, on the Friday and Saturday, investigated the coast-sections between Stainton Dale and Whitby. This party, numbering 23 at the outset, left Easington Station, on the arrival of the train from Whitby, shortly after nine o'clock, and, under the leadership of Prof. P. F. Kendall, Mr. W. Y. Veitch, and Rev. J. Hawell, proceeded by the shortest route to the old alum works on the Boulby Cliff, on the way to which they passed over the mounds at Gallihowe, supposed to be Celtic tumuli, and near them over the highest point of the Yorkshire coast. The alum works, where they found one or two geologists already at work, are specially interesting as showing the large extent of the alum industry in days gone by, and as being the place from which many good saurian remains were obtained. Here is a good section of the Upper Lias, and an instructive exposure of the junction between the Lias and the Oolite, and the plentiful nodules of the alum shale are here most fossiliferous. Returning to Easington Station at 1.21 p.m., the geologists took the train to Hinderwell, from which place, in augmented numbers, they proceeded to Runswick Bay, and walked thence along the shore to Staithes, inspecting the capital Liassic sections exposed on the way, and obtaining a good series of fossils, including very good specimens of *Stephanoceras annulatum*, and from the same zone, *Belemnites cylindricus*, with its large and well-preserved phragmocone.

A party of members interested in botany, entomology and general natural history left Easington Station at about eleven o'clock, and explored the Easington and Roxby Woods with

Mr. Kenneth McLean as guide. Crossing some fields they proceeded along Logs Lane. On this lane brushwood has been suffered to grow to such an extent that there is but a footpath remaining through a tangled thicket which affords good cover for insect and bird life. Passing Grinkle Park the party crossed over the Ridge into the Roxby Glen, and passed on through dense thickets, and down the bed of the stream and the adjoining lane. Before reaching Staithes they were met by another party which had left Staithes somewhat after midday, under the leadership of Mr. T. F. Ward and Mr. W. H. Thomas.

Marine zoologists were not in force on the occasion of this excursion, but Mr. Arnold Thomas Watson, of Sheffield, devoted himself for two or three days to the search for marine organisms in the neighbourhood. Only one low tide, however, was available each day, and that not low enough to bring many of the rarer organisms within reach.

Tea having been partaken of at the Station Hotel—and no one who has had experience of Mrs. Spink's cookery will need to be told that it was an excellent tea—a meeting was held. When the secretaries went over to Staithes some weeks previously to make some preliminary arrangements for the excursion, and asked Mr. Spink where the meeting had best be held, he suggested that if the weather were fine he supposed the best place would be the Fish Quay. He evidently thought that we intended to address the fishermen. As such was not the intention, the meeting was, by the kind permission of the School Board, held in the Board School, and was numerously attended. As time was limited the sectional meetings were dispensed with, and Mr. T. H. Nelson, of Redcar, the president of the Vertebrate Section, was voted to the chair.

The roll of societies having been called over, three new members were elected, namely, Mr. W. Ingham, B.A., York, the Rev. S. Jenkinson, Malton, and the Rev. John Ellis, Sheffield. On the motion of the Rev. E. Maule Cole, seconded by Mr. Angus Macpherson, a vote of thanks was accorded to the landowners, including Sir C. M. Palmer and Mr. Samuel Broune (shooting lessee), who had given permission for their properties to be visited, and to the leaders of parties and others who had facilitated the arrangements for the excursion. With this was coupled an expression of sympathy and condolence with the family of the late Captain Turton of Upsall Castle, near Thirsk, who had died since he so kindly, a few weeks previously, granted permission for his Roxby estate to be visited by the Union.

April 1898.

Mr. M. B. Slater proposed a vote of condolence with the widow of the late Mr. Thomas Hick, an old and valued member, which was seconded by Mr. Roebuck and passed. The sectional reports were then given.

Mr. Kenneth McLean reported for the Vertebrate Section that a large number of birds had been noted as observed. We omit the report, as Mr. McLean has drawn up a full account of the birds of the Staithes and Loftus district, which will be printed in this journal before very long.

Mr. T. A. Lofthouse, of Middlesbrough, stated that the weather had been too dry for great success in shell-hunting, and that very few species had been obtained.

Reporting for the Entomologists, Mr. William Hewett, of York, Secretary of the Section, stated that the weather had been most unfavourably dull, and that consequently very indifferent success had fallen to the lot of his section.

The Botanists, for whom Mr. T. F. Ward, of Middlesbrough, reported, had been fairly successful; 129 plants were observed by himself and Mr. W. H. Thomas, of which the following are the most noteworthy:—

Cerastium glomeratum.
Hypericum montanum.
Vicia sylvatica.
Pastinaca sativa.
Conium maculatum.
Eupatorium cannabinum.
Pulicaria dysenterica.
Anthemis cotula.
Senecio viscosus.
Senecio erucifolius.
Arctium majus.
Helminthia echioides.
Melampyrum pratense.
Origanum vulgare.
Calamintha officinalis.
Plantago coronopus.
Plantago maritima.
Epipactis latifolia.
Carex pendula.

Mr. M. B. Slater, F.L.S., of Malton, reported that a few excellent finds had been made in mosses and hepatics. Amongst those gathered on the Saturday by Mr. Barnes the most noticeable were:—

Gymnostomum tenue.
Dicranella schreberi var. elata.
Seligeria recurvata.
Campylostelium saxicola.
Brachyodus trichodes.
Didymodon cylindricus.
Trichostomum litorale.
Barbula spadicea.
Ulsta crispa.
Ulsta crispulum.
Orthotrichum stramineum.
Orthotrichum leiocarpum.
Tetrodontium brownianum.
Fissidens fontanus.
Fissidens pusillus.
Eurhynchium teesdalii.
Rhynchostegium depressum.
Plagiothecium latebricola, in fruit.
Amblystegium irriguum.

The report on Fungi was given by Mr. Charles Crossland, of Halifax, Mycological Secretary to the Botanical Section,

who contributes the appended list of species observed. He stated there were only two of the Committee present, Mr. James Needham, Hebden Bridge, and himself. The Easington and Roxby Woods were both carefully worked. The previous dry weather had hardened the tenacious soil and dried the decaying wood, and thus retarded the appearance of many species of fungi which one might have safely expected to find at the time of the year. Sixty-eight species out of those found were determined; some on the spot, while others, needing a searching microscopic examination, had to be taken home for that purpose. These 68 species consisted of 37 Agaricini, 2 Polyporeæ, 2 Thelophoræ, 1 Clavarieæ, 1 Gastromycete, 12 Uredineæ, 7 Discomycetes, 2 Pyrenomycetes, 2 Ustilagineæ and 2 Myxogastres. Many of those found are anything but common while others may be found almost anywhere. Fine specimens of *Polyporus squamosus*, 12 to 15 inches diameter, were seen growing out of the trunk of a dead tree. The lovely scarlet *Mycena strobilina* Fr. var. *coccinea* Sow. was found growing on a decaying larch twig on the ground. The Uredines were considered to be in profusion, as it is seldom we find so many species of parasitic fungi within so small an area. The list is as follows:—

HYMENOMYCETES.

AGARICINEI.

LEUCOSPORÆ.

Amanita phalloides Fr.
Laccaria laccata Scop.
Collybia velutipes Curt.
Mycena strobilina Fr. var. coccinea Sow.
Mycena pura Pers.
Mycena galericulata Scop.
Mycena debilis Fr.
Mycena capillaris Schum.
Omphalia gracillima Weim.
Hygrophorus puniceus Fr.
Hygrophorus conicus Fr.
Lactarius quietus Fr.
Lactarius vietus Fr.
Lactarius subdulcis Fr.
Russula nigricans Fr.
Russula cyanoxantha Fr.
Russula consobrina Fr.
Russula emetica Fr.
Russula veternosa Fr.
Cantharellus cibarius Fr.
Marasmius ramealis Fr.
Marasmius rotula Fr.

RHODOSPOREÆ.

Pluteus cervinus Schæff.
Entoloma sericeum Fr.
Clitopilus orcella Bull.

OCHROSPOREÆ.

Inocybe rimosa Bull.
Inocybe eutheles B.&Br.
Galera tener Schæff.
Tubaria furfuracea Pers.

PORPHYROSPOREÆ.

Agaricus campestris Linn.
Stropharia semiglobata Batsch.
Hypholoma fascicularis Huds.

MELANOSPOREÆ.

Panæolus campanulatus Linn.
Psathyrella atomata Fr.
Psathyrella disseminata Pers.
Coprinus comatus Fr.
Coprinus radiatus Fr.

POLYPOREÆ.

Boletus flavus With.
Polyporus squamosus Fr.

THELEPHOREÆ.

Stereum hirsutum Fr.
Cyphella capula Fr.

CLAVARIEÆ.

Clavaria cristata Pers.

GASTROMYCETES.

Lycoperdon pyriforme Schæff.

UREDINEÆ.

Puccinia pulverulenta Grev.
On Epilobium hirsutum.
Puccinia primulæ (DC.).
On Primula vulgaris.
Puccinia saniculæ Grev.
On Sanicula europea.
Puccinia caricis Schum.
On Carex pendula.
Puccinia taraxaci Plow.
On Taraxacum officinale.
Puccinia lychnidearum Link.
On Lychnis diurna.
Puccinia veronicæ Schum.
On Veronica montana.
Puccinia malvacearum Mont.
On Malva.
Phragmidium violaceum Schultz.
On bramble.
Melampsora lini (Pers.).
On Linum catharticum.
Melampsora farinosa (Pers.).
On Salix caprea.
Coleosporium sonchi (Pers.)
On Tussilago farfara.
Coleosporium euphrasiæ (Schum.).
On Euphrasia officinalis.

DISCOMYCETES.

Helvella lacunosa Afr.
Lachnea hirta (Schum.).
Lachnea albo-spadicea (Grev.)
Dasyscypha virginea Fckl.
Sphærospora asperior Sacc.
Ascophanus equinus Mass.
Stegia ilicis Fr.

PYRENOMYCETES.

Nectria cinnabarina Fr. Tubercularia stage.
Leptosphæria ovina Fckl.

USTILAGINEÆ.

Ustilago violacea (Pers.).
On anthers of Lychnis diurna.
Urocystis anemones (Pers.).
On leaves of Ranunculus repens.

MYXOGASTRES.

Tubulina cylindrica Rost.
Stemonites friesiana DeBary.

The Rev. John Hawell reported for the Geological Section, and stated that so far as geology was concerned the excursion had been very successful. Not only had the geologists examined a large number of most interesting sections of strata, but they had been more than usually fortunate in the finding of good and rare fossils. On that day, besides many ammonites and other fossils, some rarer crustacean remains had been found at Boulby, and on the coast near Port Mulgrave a fine slab of Ichthyosaurian remains had been met with in the zone of *Ammonites serpentinus*. During the visit of the Geological Society to Whitby, some good fish remains had been obtained in the same zone at Saltwick, and Mrs. Kendall had been particularly fortunate in finding there a specimen of an *Actæonina*. No specimen of this genus had, so far as we can learn from 'Tate and Blake' or any other source, been previously obtained from this zone of the Yorkshire Lias, and only one specimen from the Upper Lias of Yorkshire.

[The *Actæonina* has since been described by Mr. Hawell in the Proceedings of the Yorkshire Geological and Polytechnic

Society for 1896, vol. 13, part 2, pp. 199-200 and plate 35, under the name of *A. kendalii*, in compliment both to Mrs. Kendall, who discovered it, and to Prof. Kendall, who has done so much and such good work in Yorkshire geology.]

Mr. Arnold T. Watson, F.L.S., of Sheffield, who had devoted attention to the Marine Zoology of the neighbourhood of Staithes during the time of the excursion, stated that the tides were unfavourable for shore-hunting, but the following were noted or collected:—

INFUSORIA.

Acineta (sp. ?).
Zoothamnium (sp. ?).
Folliculina producta.
Chætospira muelleri.

PORIFERA—SPONGES.

Halichondria panicea.
Leucosolenia botryoides.

HYDROZOA.

Clava multicornis.
Atractylis arenosa.
Clytia johnstoni.
Obelia geniculata.
Plumularia setacea.

SCYPHO-MEDUSÆ.

Cyanæa capillata.
Polyxenia alderi? I am doubtful about this, as my specimen unfortunately died and decomposed rapidly.

ACTINOZOA.

Actinia mesembryanthemum.

ECHINOIDEA.

Echinus sphæra.
Uraster rubens.
Cribella oculata.
Ophiocoma neglecta.

NEMERTEA.

Amphiporus lactifloreus.
Nemertes borlasii. Small specimen.

ANNELIDA.

Clitellio arenarius?
Lepidonotus impar.
Nereis pelagica.
Phyllodoce maculata.
Psamathe fusca.
Leucodore ciliata.
Cirratulus cirratus.
Arenicola marina.
Lanice conchilega.
Sabellaria (sp. ?).
Serpula triquetra.
Spirorbis borealis.
Amphicora fabricia.

CRUSTACEA.

Carcinus mænas.
Pagurus bernhardus.
Balanus balanoides.
Pycnogonum littorale.
Phoxichilus spinosus.
Nymphon gracile.

POLYZOA.

Bowerbankia densa.
Bowerbankia imbricata.
Membranipora membranacea.
Pedicellina belgica.

TUNICATA.

Botryllus (sp. ?).

MOLLUSCA.

Doris pilosa, and spawn.
Eolis coronata (spawn only).
Anomia (sp. ?).
Chiton (sp. ?). Common.
Patella vulgata.
Mytilus barbatus.
Littorina littorea.
Purpura lapillus, and spawn.

A vote of thanks to the Chairman, proposed by Professor Percy F. Kendall, F.G.S., and seconded by Mr. C. Brownridge, F.G.S., concluded the business of this very enjoyable excursion.

BOOK NOTICES.

Gill's Practical Series of | Object Lesson Books. | Part II. | **Insects and Spiders** | their Structure, Life-Histories, and Habits. | By | **J. W. Tutt, F.E.S.,** | [8 lines book-titles] | London : | George Gill & Sons, | Minerva House, Warwick Lane, E.C. | 1896. This is purely an educational work, and so scarcely comes within our purview, but it is an excellent little manual of 116 pages, in crown 8vo., red cloth. As befits 'object lessons,' it is well and adequately illustrated, and the salient points in the text are brought out effectively in a graphic typographical manner. The increasing precision of modern entomology is well shown here, and it is presumable that children brought up on such pabulum as is here provided will not speak of the 'moulting' or of the 'tail' of a caterpillar.

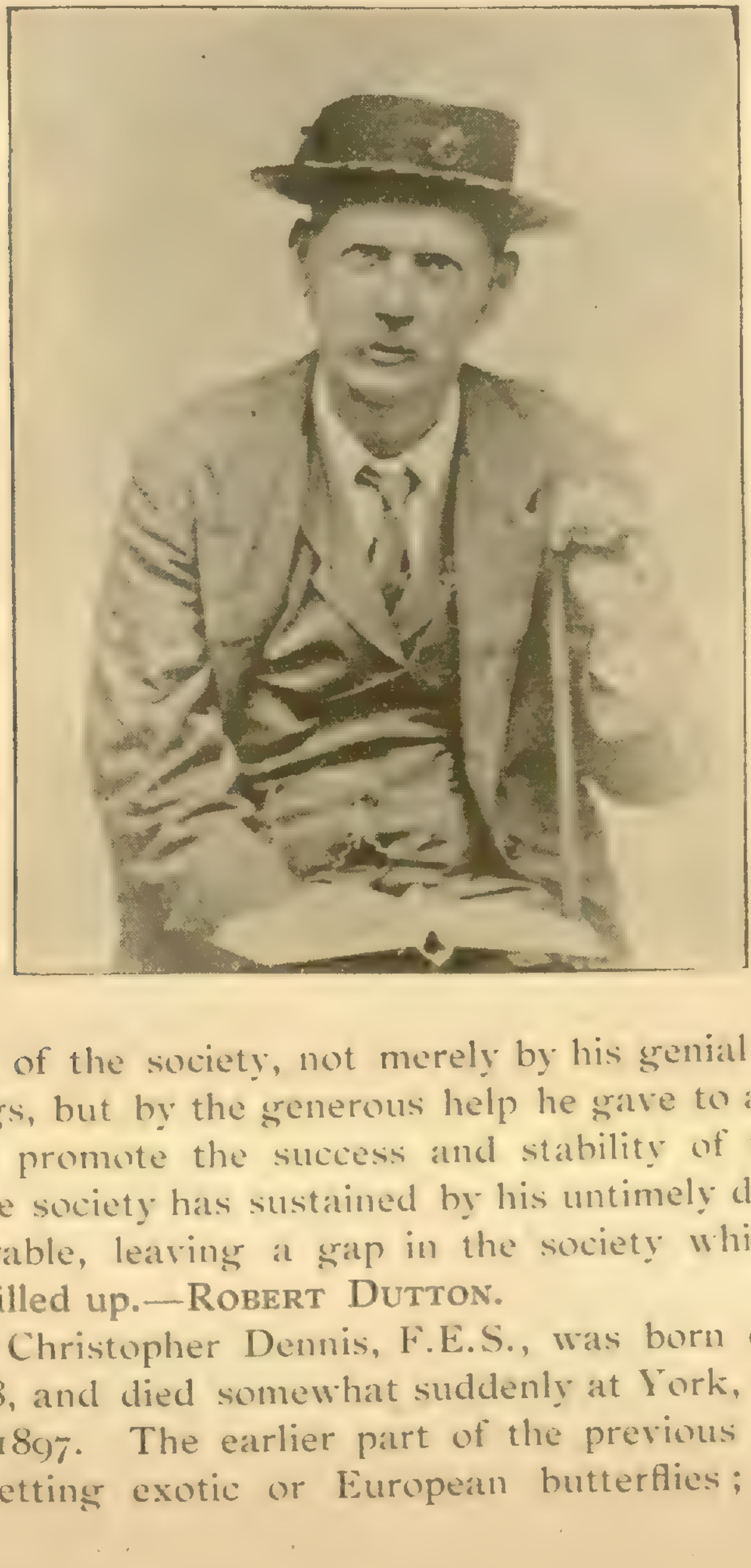
'**The** | **Lepidoptera** | **of the** | **British Islands** | a Descriptive Account of the Families, Genera, and | Species indigenous to Great Britain and | Ireland, their Preparatory States, | Habits, and Localities | By | **Charles G. Barrett, F.E.S.** | . . | **Vol. IV.** | **Heterocera** | **Noctuæ** | London | L. Reeve and Co. | . . | . . | 1897 [8vo. cloth, 404 pages]. Concerning this fourth volume, which deals with 96 species of Noctuæ, beginning with *Axylia putris*, ending with *Apamea ophiogramma*, and including also the genera *Aplecta, Aporophyla, Cerigo, Charæas, Chariptera, Cleoceris, Crymodes, Dasypolia, Dianthœcia, Dryobota, Epunda, Eurois, Hadena, Hama, Hecatera, Heliophobus, Luperina, Mamestra, Miselia, Neuria, Noctua, Pachetra, Polia, Triphæna, Ulochlæna, Valeria, Xylomiges*, and *Xylophasia*, we can but repeat the words of commendation which we have bestowed upon preceding volumes, and emphasize our conviction of the great utility of the work to British lepidopterists.

'The | **Naturalist's** | **Directory :** | for the use of | Students of Natural History, and Collectors of | Zoological, Botanical, or Geological Specimens, | giving the names and addresses of British | and Foreign Naturalists, Natural History | Agents, Societies and Field Clubs, | Museums, Magazines, etc. | — | **1898.** | London : | L. Upcott Gill, 170, Strand, W.C.' This is the fourth annual revised edition, and is published at One Shilling. The title specifies the nature of the contents, but the book is very incomplete, hosts of our best known naturalists' names not being discoverable. But in spite of this, the little book is calculated to be of considerable assistance as a work of reference. The convenience of readers is, however, much interfered with by the advertisements being on the wrong side of the page. Let anyone turn the edges of the book rapidly and he will at once see that the publishers would do well to place the advertisement pages to the right side of the opening, always leaving the left side for the directory proper.

'All About Animals, for Old and Young,' is an oblong small folio volume of photographs ot zoological subjects, which was published by George Newnes, Ltd., in twelve parts during the course of last year at 6d. each, and now issued as a cloth-bound volume at 10s. 6d. Many of them are from Gambier Bolton's well-known photographs, and the remainder are by Hudson and Kearns. The inhabitants of zoological gardens, taken in attitudes of rest, are the chief subjects, Lions, Tigers, Elephants, Rhinoceroses, Bears, Deer, Monkeys, being particularly prominent. A number of birds and reptiles have also been photographed, but are not nearly so interesting subjects as the mammals. Some of the pictures towards the end of the book are of special interest as showing active rather than passive attitudes, and to a North of England naturalist the notes as to the domestication of Kangaroos and American Bison at Haggenton Castle and of the Wild Cattle of Chillingham and Lyme are of particular interest. But surely the statement of Seals 'visiting' the Wash falls short of the truth. The publishers are to be congratulated on the book.

THE LATE G. C. DENNIS.

It is with extreme regret that we have to record the death of Mr. George Christopher Dennis, F.E.S., of York, whose sudden death at the age of 49 has removed from our midst a kind-hearted, generous, true, and sympathising friend, an upright and conscientious man, an observant and a diligent student of nature. As President for many years of the York and District Field Naturalists' Society he was most highly respected and valued, at all times furthering the interests and promoting



the welfare of the society, not merely by his genial presence at the meetings, but by the generous help he gave to all measures tending to promote the success and stability of the society. The loss the society has sustained by his untimely death is deep and irreparable, leaving a gap in the society which will not readily be filled up.—Robert Dutton.

George Christopher Dennis, F.E.S., was born on the 11th March 1848, and died somewhat suddenly at York, on the 22nd December 1897. The earlier part of the previous day he had spent in setting exotic or European butterflies; then went

out apparently in his usual health and spirits to distribute the Christmas dole in connection with one of the York charities, and whilst thus engaged in the vestry of the church he attended, was seized with an apoplectic stroke, and became unconscious almost immediately. He was taken to his home, but although he lived until after three o'clock next morning, never regained consciousness. For the greater part of his life he was connected with the well-known firm of wholesale confectioners, Sir Joseph Terry & Sons, eventually becoming partner in the business. About two years ago he retired entirely from commercial pursuits, to spend his time in natural history, gardening, fishing, and other outdoor recreations. He was best known, and for many years, as a lepidopterist, and in the pursuit of his favourite study it was his delight to make distant and lengthened excursions to localities in various parts of the country, and well do I remember the pleasant outings we have had together at Saltburn, Morecambe, St. Anne's-on-Sea, Deal (with St. Margaret's Bay and Folkestone), Hunstanton, Wicken Fen, etc.; and the many equally enjoyable shorter excursions to Bishop's Wood, Pickering, Askham Bogs, Edlington Wood, Sandburn, Castle Howard, and other well-known localities in our own county. Quite recently Mr. Dennis had taken up the study of the Neuroptera and Trichoptera with the intention of forming a collection for the York Museum, in which institution he took great interest, and to which we believe he has left his collection of insects. At the time of his death he was, and had held the office for a number of years previously, President of the York and District Naturalists' Society; he also served on the Council of the York Philosophical Society; and of one of the York Horticultural Societies, etc.; was a member of the Yorkshire Naturalists' Union, in which he was always interested, formerly holding office as Secretary to the Entomological Section, but the presidency of which, though repeatedly offered to him, he always declined. He was a life member of the Entomological Society of London; also a member of the South London Natural History Society.

In private life Mr. Dennis was genial and unassuming, and had a fund of breezy dry humour which, to his friends, was most enjoyable. He was devoted to his wife; and was one of the most unselfish men the writer ever had the good fortune to be associated with. He has left a widow but no family.—**G. T. Porritt.**

NOTE—MOSSES.

***Amblystegium aduncum* var. *plumulosum* added to the Yorkshire Moss-Flora.**—In May last, while out moss-collecting near Hebden Bridge, I came across a species quite new to me. Being unable to determine it satisfactorily, specimens were sent on to Mr. M. B. Slater, F.L.S., Malton. Mr. Slater considered it to be a variety of *Amblystegium aduncum* (L.) Lindb., and further submitted it to Dr. Braithwaite, who determined it as var. *plumulosum* Br.Sch., and includes it under that variety for Hebden Bridge, in his recently-issued Part xviii of the British Moss-Flora. The only other habitats there given for it are Snowdon (Dixon) and Glen Fender, Blair Athol (Braithwaite). Mr. Slater thinks it may be found in other alpine or sub-alpine districts by careful investigation.—J. NEEDHAM, Hebden Bridge, 7th March 1898.

BOOK NOTICE.

We have hitherto omitted to notice an admirable paper by Mr. JOHN CLAYTON, entitled '**Effects of the Weather upon Vegetation,**' being a lecture delivered to the Bradford Naturalists' Society on the 1st of March 1897; it was printed in Bradford, and is sixpence. We presume it is obtainable of the author, or of the printers, Wm. Byles and Sons. Mr. Clayton is one of our most thoughtful botanists, and anything that he writes is well worth reading, the present paper being no exception. A collotype photograph of a thorn hedge forms a frontispiece. Experiments with bean-plants in shade and in sunshine, made in 1891 and 1892, are discussed and the results stated; and the effects of sunshine, shade, shower, are investigated.

NOTES AND NEWS.

Mr. John C. Nimmo has just issued, in two volumes, a work on 'Audubon and his Journals,' by the grand-daughter of the great American ornithologist, Maria R. Audubon, with notes by Elliot Coues. The journals of Audubon are given for the first time in full. The fact that Miss Audubon and Dr. Coues are concerned furnish adequate guarantee that the biography will be authentic and interesting, and that the notes will be scientifically accurate and the journals carefully edited. The numerous illustrations include three hitherto unpublished bird-drawings, and no less than ten portraits of Audubon. Altogether we may look forward to the perusal of a most interesting biography.

A very successful meeting was held in the rooms of the Manchester Literary and Philosophical Society on Wednesday, February 16th, of representatives of the Natural History and Scientific Societies of the Centre and North of England in support of the fourth meeting of the International Congress of Zoology to be held in Cambridge this autumn. Mr. J. Cosmo Melvill presided, and Prof. S. J. Hickson gave a short history of the International Congress, explained the objects for which it was instituted, and briefly sketched the probable programme of the proceedings. Mr. J. R. B. Masefield, of the North Staffordshire Field Club, then proposed, and Mr. Madeley, of the Warrington Museum, seconded the following resolution, which was carried unanimously:—'That this meeting of persons resident in the Centre and North of England, and interested in Zoological progress, offers its most cordial support to the Committee now organizing the fourth meeting of the International Congress of Zoology to be held in Cambridge in the last week in August, and expresses a sincere hope that all societies instituted for the study of Zoology, and kindred subjects will contribute, according to their means, to the funds of the Congress, and appoint one or more representatives from their members to attend the Congress.' The meeting was attended by representatives of The Yorkshire Naturalists' Union, Yorkshire Philosophical Society, Doncaster Scientific Society, Burnley Literary and Philosophical Society, and many other similar institutions.—S. J. H.

NOTE—COLEOPTERA.

***Orchesia micans* and *Clinocara undulata*: A correction.**—Owing to the unfortunate heading to my note in last month's 'Naturalist' (p. 71), the impression is given that both these insects have been taken near Barnsley. This is not so. The latter was obviously taken near Doncaster, as the exact localities are given, viz., Edlington and Green Farm Woods. *O. micans*, in the larval state on both occasions, I brought to Barnsley from Cleethorpes, so that Yorkshire cannot be credited with the species so far as it has come under my notice. —E. G. Bayford, 20, Eldon St., Barnsley, 16th March 1898.

NOTE.—LEPIDOPTERA.

Yorkshire Records of Lepidoptera. —I notice Mr. Tutt (Nat., March 1898, p. 72), writing of records of *Procris globulariæ* and *Limacodes testudo*, asks 'Whether there be any evidence that will support the maintenance of these species in the Yorkshire List?' If Mr. Tutt had referred to the 'Yorkshire List of Lepidoptera,' he would have found that neither of these species is included in it, consequently there is no occasion to 'cut them out,' as he suggests! And if, on finding the record of the latter species in an old number of the 'Entomologist' (I cannot now find such a record; where is it?), he had turned to the second paragraph of the 'Introduction' to the 'Yorkshire List,' he would have seen that the reason why several species, such as it, were omitted, was because the evidences were not deemed sufficient to warrant their inclusion. As to *Procris globulariæ*, I was unaware, even, that my friend, Mr. Rowntree, had recorded it from Aysgarth; and as I have alway carefully noted in my interleaved copy of the 'Yorkshire List' all reliable records of additions, and also new localities of the rarer species, it is evident that if I ever saw the record, I supposed that either *P. statices* or *P. geryon*, both of which are Yorkshire species, had been mistaken for it. —Geo. T. Porritt, Crosland Hall, Huddersfield, 1st March 1898.

NOTE—MAMMALIA.

Otters in North Lincolnshire. —I greatly deplore to record the destruction of two Otters (*Lutra lutra*) on the stream at Great Cotes. I have been aware of them for two years, and have done all that I could to prevent them being molested—but unfortunately my rights only extend to one side of the water. One was shot by a sportsman and the other came by its death in a most extraordinary way. A labourer who works occasionally in the stream left an overcoat and cardigan jacket on the bank, and shortly returning saw a tail protruding from under the coat; thinking it was a thieving cat, he struck at it and succeeded in stunning a fine dog Otter, and subsequently finished the job by hanging it with twine to the handle of his spade. This man's clothes probably smelt strongly of fish, as he works on the fish-dock pontoon when not employed in the beck. These Otters, I consider, have done much good in helping to clear the stream of coarse fish and thus increasing the food for trout; I have never found any remains of trout (nor has our keeper), with which the stream is well stocked, killed by Otters. Last year two Otters were destroyed on the Waithe Beck, a stream a few miles from this. These two unfortunates had been long protected by one of our best Lincolnshire naturalists, Mr. G. H. Caton Haigh, but, as in our own case, his property did not include the entire stream.

With the wanton and unnecessary destruction of these four poor beasts the Otter has probably become an extinct species in North Lincolnshire. —John Cordeaux, Great Cotes House, R.S.O., Lincoln, 12th March 1898.

ON THE HEPATICÆ AND MUSCI OF WESTMORLAND.

GEORGE STABLER,

Levens, Milnthorpe, Westmorland.

SEVENTH PAPER.

For previous papers see 'The Naturalist,' Oct. 1888, pp. 313-320; May 1896, pp. 133-140; Sept. 1896, pp. 277-284; Jan. 1897, pp. 5-12; July 1897, pp. 213-220; and Sept. 1897, pp. 261-268.

329. ***Hypnum incurvatum*** Brid. On walls by the roadside north-west of Kendal (W. Wilson, 1838); Natland (Barnes and Stabler, 1868); Sedgwick (1869); on a boulder by the side of the small stream, Levens Park (1885); Patton Bridge, Kendal (Binstead, 1886); Preston Patrick (Binstead).

330. ***Hypnum hamulosum*** Br.&Sch. Hill Bell (Clowes, 1855); Red Screes (1881); on grassy ledge of rock, Dollywaggon Pike, Helvellyn (Binstead, 1885); Long Sleddale and Tarn Crags (Binstead).

331. ***Hypnum callichroum*** Brid. On damp rocks, Stock Ghyll, Ambleside (G. E. Hunt, 1867); abundant, fruiting freely in Naddle Forest, Mardale (Barnes and Stabler, 1869); Nab Scar (1867); Langdale (Binstead, 1885).

332. ***Hypnum imponens*** Hedw. Cliburn Moss, near Penrith (1886).

333. ***Hypnum cupressiforme*** L. Brigsteer (Barnes, 1867); Levens (1867); Kentmere; Pooley Bridge, Ulleswater; near Ingmire Hall; Low Forest, Mardale; Langdale; Mallerstang.

VAR. ***tectorum*** Sch. (*lacunosum* Wils.). Heversham Head, on rocks (Barnes and Stabler, 1867); Whitbarrow (Barnes, 1872).

VAR. ***filiforme*** Sch. On trees, Heversham Head (Barnes, 1868).

VAR. ***mamillatum*** Sch. Windermere (F. Clowes); on trees, Rydal (Barnes, 1867); Kentmere Fall (1872).

VAR. ***ericetorum*** Sch. Common on Foulshaw Moss.

VAR. ***longirostre*** Sch. Foulshaw (Barnes, 1867).

334. ***Hypnum resupinatum*** Wils. *H. cupressiforme* var. *resupinatum* (Schpr.) On a wall, Brigsteer (Barnes and

Stabler, 1869); Hugill, near Staveley (1872); Witherslack (1885); Ulpha Crag, Foulshaw (Barnes, 1867).

335. ***Hypnum arcuatum*** Lindb. *Hyp. Lindbergii* Mitt. On earth, Ulpha Crag (Barnes and Dr. J. B. Wood, 1869); on Clay Road, Levens (1884); in gravel by the river Lune, Rigmaden Park; old stone quarry, Grevygate, Levens; Levens Park Avenue (1885).

336. ***Hypnum molluscum*** Hedw. Very plentiful on limestone. Heversham Head (Barnes and Stabler, 1867); Levens Park; Whitbarrow; Naddle Forest; Crosby-Ravensworth.

VAR. ***croceum*** Tayl. Hill Bell (1865); Grisedale (Slater and Stabler); Helvellyn (W. B. Waterfall, 1887).

337. ***Hypnum crista-castrensis*** L. 'In a wood at the head of Haweswater' (Rev. Jas. Dalton, 1818); 'above Troutbeck Bridge, by the side of the road to Kirkstone, Dove Crag, Fairfield, and among birch trees by the side of Riggendale' (W. Borrer, 1844); Long Sleddale (T. Gough). It is plentiful in Naddle Forest, where it was formerly gathered by the Rev. James Dalton; Kentmere Hall (1869); Brown Ghyll, Langdale. [Borrowdale, Cumberland, c.fr., F. Clowes, and also by W. H. Pearson, April 1892].

338. ***Hypnum palustre*** L. Windermere (F. Clowes); river Kent, Sedgwick (Barnes, 1869); Brigsteer, on wet rocks (1869); Gatescarth, Mardale (1869); Wildboar Fell.

VAR. ***subsphœricarpon.*** *Hyp. subsphericarpon* Schleich. Park Beck, Kentmere (1868); Grasmere (Barnes, 1868).

VAR. ***julaceum*** Sch. Ambleside (vide Bry. Brit., p. 371).

339. ***Hypnum dilatatum*** Wils. Streams near Rydal (H. Boswell, 1876); Grasmere, on boulders (C. H. Binstead, 1893). [Cautley, Yorkshire (G. E. Hunt).]

340. ***Hypnum eugyrium*** Schpr. 'By a cascade, Ambleside' (W. Wilson, in letter to Dr. Clowes, Feb. 1856); wet rocks and stones in Park Beck, Kentmere Plantation (Barnes, 1868); Mardale and Nan Bield (1869); Long Sleddale (Binstead, 1885); Deepdale (W. B. Waterfall). [Sedbergh, Yorkshire, in the river Rawthey (G. Stabler); Lowdore, Cumberland (1868)].

341. ***Hypnum ochraceum*** (Turn.) Wils. Bry. Brit. Kentmere Fall (1871); near Grisedale Tarn (1878); in stream at Kirkstone Pass (1881); Red Tarn, Glenridding (1886).

342. ***Hypnum cordifolium*** Hedw. In a bog near Hang Bridge, Milnthorpe (Barnes, 1870); Foulshaw Moss (Barnes and Stabler, 1868); Cliburn Moss (1886); Brunt Knot, Staveley (1870); New Hutton (Binstead, 1886); Grasmere (Binstead, 1893).

343. ***Hypnum giganteum*** Schpr. Mardale (Barnes and Stabler, 1869); Staveley (1870); Sleddale Forest (1876); Benson Knot (Binstead, 1885).

344. ***Hypnum sarmentosum*** Wahl. Helvellyn (J. Nowell, 1867); Mardale (Barnes, 1869); Hill Bell (1869); Middleton Fell (1881); Harter Fell (1877); Grisedale (1878); Nan Bield (1869); Red Tarn, Helvellyn (1886); Brown Ghyll, Oxendale (1893).

345. ***Hypnum cuspidatum*** L. Windermere (F. Clowes); Kentmere (Barnes, 1868); Heave's Park, Levens, c.fr. (1868); Foulshaw Moss and Ulpha; Naddle Forest; Force Bridge, Levens; Kirkby Stephen; Long Sleddale.

346. ***Hypnum Schreberi*** Ehrh. Very common, but rare with fruit; near Storrs, Windermere, c.fr. (F. Clowes); Witherslack Moss, c.fr. (Barnes, 1867); Low Forest, Mardale (1887); Heversham Head; Mallerstang; Place Fell and Helvellyn (W. B. Waterfall).

347. ***Hypnum purum*** L. Ulpha Moss (Barnes, 1867); Bowness, c.fr. (1870); Sizergh Fell, c.fr. (1870); Grayrigg (1868); Kentmere Plantation; Heversham Head (1876); Crosby Ravensworth (1869); Merke Side, Swindale; Place Fell and Patterdale (W. B. Waterfall).

348. ***Hypnum stramineum*** Dicks. In a bog north of Kentmere village, c.fr. (1868); Brunt Knot, Staveley (1885); Mardale (1871); Benson Knot (Binstead, 1885); Wildboar Fell; abundant by the upper part of the river Eden above Hell Ghyll.

349. ***Hypnum scorpioides*** L. Ulpha, Foulshaw, c.fr. (Barnes, 1867); Naddle Forest (1878); Windermere (1868); Grisedale (W. B. Waterfall, 1886.)

350. ***Hylocomium splendens*** (Dill.) Windermere, c.fr. (T. Gough and F. Clowes); Barrow Field, c.fr. (Barnes, 1868); Staveley, c.fr. (1870); Heversham Head, c.fr. (1881); Naddle Forest; Mallerstang; Place Fell and Patterdale (W. B. Waterfall); Long Sleddale (1888).

[Swarthmoor, near Ulverston, North Lancashire* (Thos. Lawson, 1670)].

351. ***Hylocomium umbratum*** (Schreb.). Grasmere (C. H. Binstead, 1885); Mardale, growing with *Hylocomium brevirostrum* (1887). [Near Keswick, c.fr. (Miss Wright, 1856); fairly plentiful at Lowdore (Binstead, 1888), where I have also since gathered it.]

352. ***Hylocomium brevirostrum*** (Ehrh.). Hawes Wood, by the river Kent (J. Just); Langdale (Barnes, 1867); Windermere (F. Clowes); Stock Ghyll (1867); Barrow Field (Barnes and Stabler, 1872); Kentmere Hall (1869); Whitbarrow (1872); Heversham Head; Staveley; Naddle Forest; Swindale; Deep Ghyll, Mallerstang.

353. ***Hylocomium squarrosum*** (L.). Windermere (F. Clowes); Heversham Head (Barnes and Stabler, 1868); Ings (1882); Kentmere Plantation (1867); Stock Ghyll, Ambleside; Naddle Forest; Mardale (1871); Witherslack.

VAR. ***subpinnatum*** Sch. *Hylocomium calvescens* Wils. Long Sleddale (Binstead, 1885); Meal Bank, Kendal, by the river Mint (Binstead, 1885); Stock Ghyll (1867).

354. ***Hylocomium triquetrum*** (L). Heversham Head, c.fr. (Barnes and Stabler, 1868); Belle Isle, Windermere, c.fr. (Clowes and Stabler); Rigmaden Park (1880); Whit-

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* In a communication I have had from Mr. Lister Petty, who appears to have given considerable attention to the biography of Thomas Lawson and John Ray, especially in connection with the botany of North Lancashire, he takes exception to some of my statements respecting Thomas Lawson in the historical introduction to this paper. I do not recollect all the sources of my information under this head, and it may be that some of it has been unreliable. I kept no references. I find, however, that in all probability the date 1653 has been inadvertently written for 1658. Thomas Lawson resided at Newby Stones, near Great Strickland, at the time of his marriage with Frances Wilkinson, of Great Strickland, in May 1659, and to say that he was actually schoolmaster at Great Strickland in 1658 is, perhaps, more than can be actually proved, however presumptive. Similarly it is, perhaps, impossible to prove that Ray and Lawson ever met, and hence, in this sense, they were not *personal* friends, yet we would hardly expect Ray to pass through Penrith on his way from Carlisle to Shap without making the personal acquaintance of Lawson. I do not recollect my authority for stating that Ray was in Westmorland in 1690. I am strongly disposed now to think this is wrong. Ray's third and last visit appears to have been in 1671, when he was accompanied by Willisel. Circumstances prevent me from giving more attention to the subject of this note. My thanks are due to Mr. Lister Petty for drawing attention to these points.—G.S.

barrow (1878); Naddle Forest (1887); Mallerstang (1888); Long Sleddale (1888).

355. ***Hylocomium loreum*** (L.). 'Near Ambleside, Westmorland, Dr. J. E. Smith,' Withering's Arrangement of Brit. Plants (A.D. 1796), p. 858; Staveley (1867); Kentmere Plantation (1868); Whitbarrow; Little Langdale (1875); Mardale (1882); Hill Bell (1871); Ings; Stock Ghyll; Grisedale Bridge and Place Fell (W. B. Waterfall); Cock Hag, Underbarrow (1887); Wildboar Fell (1888).

STEGOCARPÆ.

Tribe.—*SPHAGNACEÆ.*

356. ***Sphagnum acutifolium*** Ehrh. Windermere (F. Clowes); Foulshaw and Witherslack Mosses (Barnes and Stabler); Langdale (Barnes); Rosgill; Wildboar Fell; Keppel Cove (W. B. Waterfall).

VAR. ***deflexum*** Schpr. Foulshaw Moss (Barnes and Stabler); Naddle Forest (1871); Long Sleddale (Binstead, 1885).

VAR. ***purpureum*** Sch. Foulshaw Moss (Barnes and Stabler).

VAR. ***tenue*** Braithw. Skeggleswater (Barnes).

[VAR. ***quinquefarium*** Br. forma ***pallens*** Warnst. Bracken Ghyll, Dent (Barnes and Stabler, 1872).]

VAR. ***fuscum*** Sch. Halecot Moss, Witherslack (Barnes and Stabler, 1876); Crosthwaite Moss (B. and S.); Sandford Bog (1891); the fruit on this variety is very rare.

VAR. ***luridum*** Angstr. Foulshaw Moss (1872); on hills between the river Dee and river Lune (1872).

VAR. ***luridum*** forma ***lætevirens*** Braithw. Foulshaw Moss (1867); Staveley (1872).

VAR. ***luridum*** forma ***tenellum*** Warnst. Crosthwaite Moss (1887).

[VAR. ***luridum*** forma ***leptocladon*** Limp. Dent (1872).]

VAR. ***luridum*** forma ***compactum*** Warnst. Staveley Head (1867); Dent.

VAR. ***luridum*** forma ***plumosum*** Milde. Foulshaw Moss (1872).

VAR. ***luridum*** forma ***pycnocladum*** Schlieph. Ulpha Moss (J. M. Barnes, 1876).

357. ***Sphagnum rubellum*** Wils. Witherslack Moss (Barnes, 1876); Foulshaw Moss, ♂ (1872); Naddle Forest (1871).

358. ***Sphagnum acutiforme*** Schlieph.&Warnst.
VAR. ***robustum*** Russ. Barbon Low Fell (1875).
VAR. ***robustum*** forma ***pallens*** Warnst. Grayrigg Forest (J. M. Barnes, 1876).
VAR. ***tenellum*** forma ***compactum*** Warnst. Crosthwaite Moss (Barnes and Stabler).

359. ***Sphagnum fimbriatum*** Wils. Ulpha and Witherslack Mosses (J. M. Barnes, 1867).

360. ***Sphagnum strictum*** Lindb. *Sph. Girgensohnii* Russ. Skeggleswater and Staveley Head (Barnes and Stabler); Sleddale Forest (1876); Barbon Fell (1875); Grayrigg Forest (1876); Middleton Fell (1881); Far Easedale, Grasmere (C. H. Binstead, 1893).

361. ***Sphagnum squarrosum*** Persoon. Wansfell Pike (1867); Windermere (F. Clowes); Sleddale Head (1869); Witherslack Moss, c.fr. (Barnes and Stabler); Fairfield and Dollywaggon Pike (Binstead, 1885); High Street (W. B. Waterfall, 1887); Wildboar Fell (1888).

362. ***Sphagnum teres*** Angstr. Broadgate Bog, Ings (1872); Sleddale Forest (Barnes and Stabler, 1876); Grayrigg Forest (1876); Barbon Fell (1885); Kirkstone Pass (1881); Mardale (1878).
The VAR. ***squarrosulum*** is found amongst the type of the species and appears to be merely a state or condition of it.

363. ***Sphagnum intermedium*** Hoffm. *S. recurvum* P.B. Broadgate Bog, Ings (Barnes and Stabler, 1872); Skeggleswater (Barnes, 1876); Foulshaw Moss (1878); Crosthwaite Moss (Barnes and Stabler (1876); High Street (W. B. Waterfall, 1887); Barbon Fell (1885); Mardale (1887); Wildboar Fell (1888).
VAR. ***majus*** Angstr. Foulshaw Moss (1872); Barbon Fell (Barnes and Stabler, 1875).
VAR. ***obtusum*** Warnst. Sleddale Forest (1876).
VAR. ***pulchrum*** Braithw. Witherslack and Crosthwaite Mosses (Barnes and Stabler, 1881).

364. ***Sphagnum cuspidatum*** Ehrh. Witherslack Moss (Barnes and Stabler, 1867). Foulshaw (1876); Windermere (F. Clowes); Cliburn Moss (1886); Mallerstang (1888).
VAR. ***plumosum*** Nees. Witherslack Moss (Barnes and Stabler, 1867).
VAR. ***falcatum*** Braithw. Foulshaw Moss (1872).

365. ***Sphagnum molle*** Sull. *S. Mulleri* Sch. Swirrel Edge, Helvellyn (H. N. Dixon, 1891).

366. ***Sphagnum rigidum*** Sch. Little Langdale (1875); Grayrigg Forest; Cliburn Moss (1886); Mardale Common (1887); Benson Knot (Binstead, 1885).

VAR. ***compactum*** Schpr. Grayrigg Forest (1876); Benson Knot (Binstead, 1885).

367. ***Sphagnum subsecundum*** Nees. Hill Bell (1871); Grayrigg Forest; Cliburn Moss; Barrow Field (1872); Swindale (1887); High Street (Waterfall).

368. ***Sphagnum contortum*** Schultz. Fairfield (F. Clowes); Hill Bell (1871); Langdale (W. West, 1881).

VAR. ***fluitans*** Grav. Witherslack Moss (1875).

VAR. ***turgidum*** forma ***plumosum*** Warnst. *Sph. contortum* v. *obesum*. Skeggleswater (Barnes and Stabler, 1872); Witherslack Moss (Barnes, 1872); Grisedale (1878).

VAR. ***turgidum*** forma ***strictum*** Warnst. Little Langdale (1875).

VAR. ***auriculatum*** Schpr. Witherslack Moss (1875); fide Warnstorft.

369. ***Sphagnum laricinum*** Spruce. Naddle Forest (1871); Bowness (J. M. Barnes, 1872); Barbon Fell (Barnes and Stabler, 1876); Sleddale Forest, 1876); Grayrigg Forest (Barnes and Stabler, 1876); Barrow Field (1878); Benson Knot and Blind Tarn Moss, Grasmere (Binstead, 1885).

370. ***Sphagnum platyphyllum*** (Sull.) Warnst. *Sph. laricinum* var. *teretiusculum* Warnst. Staveley (Barnes, 1877) fide Warnstorft.

371. ***Sphagnum tenellum*** Ehrh. *Sph. molluscum* Br. Southwest side of Foulshaw Moss (1872); Ulpha (W. West, 1883). [Dent, 1872].

372. ***Sphagnum imbricatum*** Hornsch. *Sph. Austinii* Sull. Witherslack Moss (Barnes, 1875); Lyth Moss (1876); Meathop Moss (1876); Sandford Bog (1891).

373. ***Sphagnum papillosum*** Lindb. Plentiful on Foulshaw and Witherslack Mosses (Barnes and Stabler, 1875); Naddle Forest (1871); Rosgill Moor (1887); Meathop Moss (W. West, 1883); Grisedale (W. B. Waterfall, 1887).

VAR. ***confertum*** Lindb. Lyth Moss (Barnes, 1876).

374. ***Sphagnum cymbifolium*** Ehrh. Windermere (F. Clowes); Broadgate Bog, Ings (Barnes and Stabler, 1872); Langdale (Barnes, 1875); Barbon Fell (1875); Foulshaw

Moss, 19th Aug. 1876, with capsules, and containing microspores fide Warnstorft. Keppel Cove (W. B. Waterfall, 1887).

VAR. ***congestum*** Schpr. Broadgate Bog, Ings (Stabler); Witherslack (Barnes).

VAR. ***laxum*** Warnst. Sleddale Forest (1876).

375. ***Sphagnum medium*** Limpricht. Witherslack Moss (Barnes and Stabler, 1872); Foulshaw. Usually of a purplish colour and rare in fruit.

VAR. ***congestum*** forma ***purpureum*** Warnst. Halecot Moss, Witherslack (1876). I am led to think the fruit of this species is scarce, as I have only seen two or three capsules.

Order. HEPATICÆ.

Sub-order 1. *JUNGERMANIACEÆ.*

Tribe 1. *JUBULEÆ.*

1. ***Frullania Tamariscii*** (L.) Dum. Kendal (John Gough). The specimen is in the herbarium of Dr. Dalton in Owens College Museum, Manchester. Windermere (1868); Grayrigg Forest (1869); Hill Bell; Witherslack (on rocks); Ulpha Crag; Staveley; Whitbarrow, on juniper bushes (1872); Brown Ghyll, Langdale; Barrow Field; Black Crag, Staveley; Low Forest, Mardale (1887); Levens Park; Mallerstang; Sadghyll, Long Sleddale (1888).

2. ***Frullania microphylla*** (Gottsche.) Pearson. Hill Bell (31st Oct. 1868); Long Sleddale (1888). Dr. Spruce, writing to me on 11th Aug. 1872, remarks, 'I ought to say that I consider *Fr. microphylla* (as I suppose one may call it provisionally) quite distinct from all the forms of *Frullania Tamarisci.*'

3. ***Frullania fragilifolia*** Tayl. Low Bridge, Kentmere, on ash (1870); Naddle Forest (1871); Windermere (Dr. Carrington, 1875); Barrow Field Wood, near Kendal, on oak (1878).

4. ***Frullania dilatata*** L. Common on trees, walls, and rocks. Staveley (1867); Witherslack; Levens Park; Kentmere Park; Ambleside; Naddle Forest; Brigsteer Wood; Heversham Head (1869).

[***Jubula Hutchinsiæ*** (Hook.) Spruce. Lowdore (Rev. C. H. Waddell, 1884), on rocks to the left, at the bottom of the Fall, and since collected there by Mr. W. H. Pearson].

BIBLIOGRAPHY:

Papers and records published with respect to the Natural History and Physical Features of the North of England.

FERNS, FERN-ALLIES, AND CHARACEÆ, 1890-1893.

THE present instalment has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

Previous instalments of the Bibliography of these groups were included with that of Flowering Plants, down to that for 1888; and since then have been issued separately. They have appeared as follows:—

For 1884, in 'Naturalist,' Sept. 1885, pp. 331-336.
,, 1885, ,, June 1886, pp. 174-179.
,, 1886, ,, Dec. 1890, pp. 359-374.
,, 1887, ,, April-May 1891, pp. 125-133.
,, 1888, ,, June 1891, pp. 189-199.
,, 1888-89, ,, March-April 1897, pp. 95-100.

The counties and vice-counties of which cognizance is taken are the following, as named and numbered in the Watsonian scheme:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Lake Lancashire; 70, Cumberland; and 71, Isle of Man.

ANON. [not signed]. LANC. S.

Rambles taken during the year 1889 . . . Stalybridge [Stamford Park, Hurst and Lees, 24th August; *Asplenium ruta-muraria* still grows, untouched for twenty years]. 10th Ann. Rep. Manch. Micr. Soc. for 1889, publ. 1890, pp. 117-118.

ANON. [Editorial note, not signed]. ISLE OF MAN.

[Destruction of Plants; instancing *Osmunda regalis* in the Isle of Man]. Research, March 1890, p. 206.

ANON. [not signed]. ISLE OF MAN.

Phenological Observations [made in the Isle of Man; dates given for *Cryptogramme crispa*]. Yn Lioar Manninagh, July 1890, pp. 177-178.

ANON. [not signed]. ISLE OF MAN.

Excursion to Dalby [9th Sept. 1886; *Asplenium marinum* noted]. Back Trans. I. of Man N.H.S., i. 106; publ. with Yn Lioar Manninagh, Oct. 1890.

ANON. [not signed]. ISLE OF MAN.

[Ferns noted at an] Excursion to Druidale ['on Friday the 15th,' 'St. Swithin's Day,' 1887; *Asplenium ruta-muraria*, *Osmunda*, and *Lastræa oreopteris*]. Back Trans. I. of Man N.H.S., i. 123-125; publ. with Yn Lioar Manninagh, Oct. 1890.

ANON. [not signed]. LANC. S. AND W., YORK MID W.

Flora of the Stonyhurst District [of 10 miles' radius] . . Second Edition. Clitheroe: . . 1891. [8vo. 45 pages, paper cover; a full enumeration, with localities and introductory remarks: 24 ferns, 6 equisetids, 2 lycopods, and 1 chara].

ANON. [not signed]. WESTMORLAND.

The British Pteridological Society [Excursion to Langdale, 2nd Aug. 1892; a very neatly-tasselled form of *Lastræa pseudo-mas, L. montana angustata*, a finely-crested form of *Hymenophyllum unilaterale*, and *L. montana truncata* and *congesta* found]. Gard. Chron., 27th Aug. 1892, p. 245.

ANON. [signed 'H.E.']. ISLE OF MAN.

The Isle of Man [a leading article; casual notes anent presence *of Osmunda* and *Adiantum capillus-veneris*]. Gard. Chron., 3rd June 1893, p. 656.

J. GILBERT BAKER. YORK N.E.

[Occurrence of *Equisetum telmateia* var. *serotinum* at Forge Valley, mentioned in a note headed] Occurrence of *Carex strigosa* in North Yorkshire. Nat., Jan. 1890, p. 16.

C. R. BEAUMONT. LANC. S.

A Ramble Round Daisy Nook [near Oldham; *Nitella opaca* in Fitton Ponds]. Trans. Rochdale Lit. and Sci. Soc., Vol. 2, 1889-90, publ. 1890, pp. 60-77.

H. BRIERLEY. DERBYSHIRE.

Penketh School Field Club [at Cressbrook, Monsall and Miller's Dale; *Polypodium calcareum* noted]. N.H.J., 15th June 1890, pp. 90-91.

J. H. CADBURY AND H. T. HODGKIN. DURHAM, YORK N.W.

Leighton Park N.H.S. [including notes on *Lycopodium alpinum* from Upper Teesdale]. N.H.J., 15th Oct. 1893, p. 119.

P. CAMERON. CHESHIRE.

On the Galls of Mid-Cheshire. | Part II. [mentioning details and localities for dipterous galls on *Pteris aquilina*]. Trans. and Ann. Rep. Manch. Microsc. Soc. for 1892, publ. 1893, p. 85.

M. CARR. CUMBERLAND.

Botany Notes [for Bolton, Cumberland, anent *Botrychium* and *Ophioglossum*]. N.H.J., 15th Dec. 1890, p. 172.

W. NORWOOD CHEESMAN. YORK MID W.

[Ferns and Lycopods observed by] the Yorkshire Naturalists' Union at Malham and Gordale [11th Sept. 1890: *Polypodium vulgare, P. calcareum, Cystopteris fragilis, Polystichum aculeatum, Lastræa oreopteris, Asplenium viride, A. trichomanes, A. ruta-muraria, Scolopendrium, Lycopodium selago*, and *Selaginella selaginoides*]. Nat., June 1891, pp. 177-178.

A. C[RELLIN]. ISLE OF MAN.

Notes on the Botany of the Isle of Man. - List of Ferns [enumerating 22 species by their scientific and English names, without any information whatever]. Trans. Isle of Man N.H.S., Vol. 1, 1879-84, publ. 1888, p. 24.

R. W. C[ROSLAND]. YORK N.E.

Pillwort [*Pilularia globulifera*] with one 'pill' at Tilmire on Mar. 27th. N.H.J., 15th May 1891, p. 71.

CHAS. CROSSLAND. YORK MID W.

[Ferns, etc., observed by] Yorkshire Naturalists in Mid-Ribblesdale [between Sawley and Gisburn, 7th August 1893; *Equisetum sylvaticum* and *Ophioglossum*]. Nat., Jan. 1894, p. 10.

J. BURTT DAVY. LINC. N.

Additions to the Flora of the Alford District of North Lincolnshire during 1890 [all verified by F. Arnold Lees; including *Aspidium lobatum*, *Lastræa dilatata*, *L. spinulosa*, and *Ophioglossum vulgatum*; *Athyrium filix-fœmina* and *Lastræa spinulosa* found in Tothill Wood]. Nat., March 1891, pp. 65-66.

J. BURTT DAVY. LINC. N

Notes on the Rev. W. Fowler's List of Lincolnshire Limestone Plants [giving North Lincolnshire stations for *Polystichum angulare*, *Asplenium ruta-muraria*, and *A. adiantum-nigrum*]. Nat., Feb. 1891, p. 39-42.

J. BURTT DAVY. LINC. N. AND S.

Notices of Books. Botany and Outline Flora of Lincolnshire. By F. Arnold Lees [which is criticised in detail, with references in particular to *Lastræa oreopteris* and *Chara vulgaris*]. J. of Bot., April 1893, pp. 123-4.

M. DEMAIN. LANC. S.

The Flora of the Banks [of the Ribble at Knunck Knowles near Clitheroe; *Ophioglossum vulgatum* noted]. Sci. Goss., July 1892, p. 152.

JOHN EMMET. YORK MID W.

Ferns in the Frost [at Boston Spa; noting effects of severe weather of May on garden examples of *Lastræa rigida* (from Ingleborough) and *L. dilatata*]. Nat., July 1891, p. 208.

JOHN B. FOGGITT. YORK MID W.

***Botrychium Lunaria* in Wharfedale [near Arncliffe, and on the** Clouder]. Nat., Sept. 1892, p. 259.

WILLIAM FOGGITT. YORK N.W.

[Fern observed by] the Yorkshire Naturalists' Union at Leckby Carr [on 18th May 1891; *Lastræa spinulosa*]. Nat., Aug. 1891, pp. 239-240.

J. H. F[RYER]. YORK N.E. AND S.E.

[Ferns noted by] York, Botham. — N.H. Club [at Coxwold, *Polypodium phegopteris* and *P. dryopteris*; latter not re-discovered at Buttercrambe this year]. N.H.J., 15th Nov. 1892, p. 130.

J. H. FRYER. YORK N.E.

York, Botham, N.H.C. [notes anent *Botrychium* round Kirkby Moorside and Helmsley, 13th and 14th May 1893]. N.H.J., 15th June 1893, p. 79.

SAMUEL GASKING. ISLE OF MAN.

Additions to the List of the Plants of the Isle of Man [including *Equisetum palustre*, *E. variegatum*, and *Chara vulgaris*; no details given beyond English names]. Research, Feb. 1890, p. 186.

J. G. GOODCHILD. YORK N.W.

Some of the Flowering Plants and of the Ferns of Upper Swale-dale [a list including 19 species of ferns and 4 lycopods, with remarks and some localities and altitudes given]. Nat., Aug. 1890, p. 255.

PERCY H. GRIMSHAW. CUMBERLAND.

Notes on the Flora of West Cumberland [being a full list of plants observed in early June 1890 round Seascale, with localities and remarks, including 11 ferns, *Equisetum arvense*, and 3 lycopods; *Pteris aquilina* is also noted for St. Bees' Head]. Nat., Nov. 1890, pp. 325-334.

PERCY H. GRIMSHAW. CUMBERLAND.

***Lycopodium alpinum* in West Cumberland: a Correction [of name** from *L. annotinum*, which has only one Lakes station]. Nat., Dec. 1890, p. 356.

PERCY H. GRIMSHAW. CUMBERLAND.

Growth of *Lycopodium* [*clavatum* in 'fairy-rings' on the side of Irton Fell, Cumberland; details entered into]. J. of Bot., May 1891, p. 153.

PERCY H. GRIMSHAW. YORK MID W.

***Botrychium Lunaria* in Wharfedale [at Burley and at Troller's** Gill.]. Nat., July 1892, p. 215.

LEO. H. GRINDON. LANCASHIRE.

Lancashire [;] Brief Historical and Descriptive Notes . . . . 1892 [8vo. cloth, xii + 355 pages and numerous illustrations: at p. 339 *Lastræa dilatata* mentioned as the most generally diffused fern in Lancashire, although it is superseded in some parts by the 'amber-spangled polypody,' whatever this may be].

HENRY AND JAMES GROVES. CUMBERLAND.

Notes on the British Characeæ for 1887-9 [including notices of *C. hispida* L., Cumberland, E. Hodgson, herb. A. Bennett; *C. vulgaris* L., Cheviotland (Holy I.), 1889, H. Masterman; var. *longibracteata*, Lanc. N., 1874, E. F. Linton, herb. Boswell; and *Nitella flexilis* var. *crassa*, Westmorland, Grasmere, 1884, T. A. Cotton, comm. A. Bennett]. J. of Bot., March 1890, pp. 65-69.

JOS. T. GUMERSALL. WESTMORLAND AND FURNESS.

Hawkshead Notes [anent *Botrychium* in leaf]. N.H.J., 15th Sept. 1893, p. 97.

FREDERICK J. HANBURY. DURHAM OR YORK N.W.

The Late James Backhouse [a memoir of his life and career; with a reference to *Woodsia ilvensis* in Teesdale]. J. of Bot., Dec. 1890, pp. 353-356.

JAMES HARDY. CHEVIOTLAND.

Report of the Meetings of the Berwickshire Naturalists' Club for the year 1889 [noting *Allosorus crispus* at Reaveley; *Polypodium dryopteris*, *Lastræa oreopteris*, *L. filix-mas* and *Blechnum* near the Linns, Linhope; *Athyrium rhæticum*, *Ophioglossum*, *Botrychium*, all noted as gathered in various stations in Cheviotland; *Lycopodium clavatum* at Greave's Ash, and *Equisetum sylvaticum* about Kielder]. Proc. Berw. Nat. Club for 1889, Vol. 12, No. 3, publ. 1890, pp. 436-506.

C. P. HOBKIRK. CUMBERLAND.

***Osmunda regalis* in the Lake District [with reference to P. H.** Grimshaw's record for Seascale and Drigg and the British Association report on disappearance of plants]. Nat., Jan. 1891, p. 20.

CHARLES P. HOBKIRK AND P. F. LEE. DURHAM, YORK N.W., S.W., N.E., AND MID W.

Disappearance of Plants in Yorkshire [being a report made to the Y.N.U. and Brit. Ass., anent *Asplenium viride*, *A. trichomanes*, *Scolopendrium*, *Woodsia ilvensis*, *Polystichum lonchitis*, *Osmunda*, and *Ophioglossum vulgatum*]. Nat., Jan. 1891, pp. 3-6.

H. T. HODGKIN. DURHAM, YORK N.W.

Holiday Finds [in Teesdale; *Equisetum variegatum*]. N.H.J., 15th Oct. 1892, p. 108.

WILLIAM HODGSON. CUMBERLAND.

Disappearance of Plants in Cumberland [reported on for British Association; *Osmunda*, *Asplenium viride*, *A. trichomanes*, *A. marinum*, *Ceterach*, *Scolopendrium*, *Cystopteris fragilis*, *Polystichum lonchitis*, *Polypodium dryopteris*, and *P. phegopteris* mentioned, with a number of ancient-date records to show the changes in the flora]. Nat., Jan. 1891, pp. 7-12.

GEORGE JOHNSTON. CHEVIOTLAND.

Selections from the Correspondence of Dr. George Johnston [with notes of *Osmunda* at Fenton (p. 17); and of *Asplenium septentrionale* at Kyloe Crags (p. 73)].

P. M. C. KERMODE. ISLE OF MAN.

Phenological Observations [giving Manx dates for *Allosorus crispus*]. Yn Lioar Manninagh, April-Oct. 1891, p. 295.

M. K[ITCHING]. YORK MID W.

[Notes made by N.H. Society of School at] York, The Mount [*Osmunda* at Askham Bog, 31st Aug. 1892]. N.H.J., 15th Sept. 1892, p. 92.

P. F. LEE. YORK S.W.

[*Nephrodium spinulosum* observed by] the Yorkshire Naturalists' Union at Bretton Park [14th June 1890]. Nat., Aug. 1890, p. 226.

B. B. L[E].T[ALL]. 'YORK.'

York, Bootham. Natural History, &c., Club [noting *Lycopodium *annotinum* near York]. N.H.J., 15th May 1890, p. 75.

B. B. LETALL. 'YORKSHIRE.'

A New Record for Yorkshire [a large patch of *Lycopodium *annotinum* within ten miles of York; distribution includes Westmorland, Cumberland, Durham, Lancashire, the latter two doubtful]. N.H.J., 15th June 1890, p. 95

B. B. LETALL. YORK N.E.

[A *Chara* in the *Zannichellia* pond near Strensall Station, 15th Oct. 1890]. N.H.J., 15th Nov. 1890, p. 151.

B. B. LETALL. YORK N.E.

[Bifid Hard Fern (*Blechnum spicant*) near Scarborough]. N.H.J., 15th March 1891, p. 36.

B. B. LETALL YORK MID W., N.E., AND S.E.

[Botanical Notes made by] York, Bootham, N.H. Club [*Osmunda* getting very scarce at Askham; *Polypodium phegopteris* and *P. dryopteris* found at Buttercrambe, *Pilularia globulifera* near Skipwith Common; with a few brief particulars]. N.H.J., 15th Dec. 1891, p. 167.

WILLIAM NELSON. YORK S.W.

[*Asplenium ruta-muraria* noted at Sandal, in] Extracts from a Conchologist's Note-Book. Nat., Sept. 1891, p. 273-4.

R. NEWSTEAD. CHESHIRE.

[*Pteris* noted at Ince, in a note] on Some New or Little Known *Coccidæ* found in England. Ent. Mo. Mag., June 1891, pp. 164-166; bibl. notice in Ent. Rec., 15th June 1891, p. 80.

W. H. PAINTER. DERBYSHIRE.

A Contribution to | the Flora of Derbyshire. | Being an Account of the | Flowering Plants, Ferns, and Characeæ | found in the County. | By the Rev. W. H. Painter, | . . . . . | London: | George Bell & Sons, ... | . . . . | Derby: | . . . | 1889. [8vo. cloth, 8 pages title and contents + folding map + pp. 1-156; Bibliography at pp. 5-9; at pp. 139-144 are enumerated 26 ferns, 2 lycopods, 6 equisetids, and 4 characeæ; range stated and localities given].

ALBERT H. PAWSON. YORK N.W.

[Ferns, etc., observed by] the Yorkshire Naturalists' Union at Aysgarth [22nd May 1893; *Asplenium trichomanes*, *A. ruta-muraria*, *A. viride*, *Allosorus*, *Polystichum aculeatum*, and *Selaginella selaginoides*]. Nat., Aug. 1893, p. 229.

A. H. Pawson. York S.W.

[Ferns, etc., observed by] Yorkshire Naturalists at Askern [15th June 1893; *Lastræa thelypteris*]. Nat., Oct. 1893, p. 290.

A. H. Pawson. York N.E.

[Ferns observed by] Yorkshire Naturalists at Kirkby Moorside [10th July 1893; *Polystichum aculeatum*]. Nat., Oct. 1893, p. 320.

L. Petty. Furness.

Plants of the [Grange] District [common plants omitted; a bare enumeration, which includes 21 ferns]. Atkinson's Guide to Grange and Arnside, first issue, not dated, but published 1st Jan. 1893, p. 66.

Lister Petty. Lanc. W.

The Plants of Leck and Neighbourhood, Lancashire [enumerated, with localities stated; 16 ferns, *Equisetum arvense* and *Chara fragilis*]. Nat., April 1893, p. 102.

Lister Petty. Cumberland.

A Few Plants of South-West Cumberland [from the Duddon area; enumerating with remarks, *Hymenophyllum unilaterale, Lomaria spicant* v. *furcans, Asplenium marinum, Ceterach, Cystopteris fragilis, Phegopteris dryopteris, Ph. polypodioides, and Osmunda*]. Nat., May 1893, p. 141.

J. F. Pickard. York Mid W.

A Few Notes on the Flora of Newton-in-Bowland and Neighbour-hood [including *Botrychium, Polypodium dryopteris, P. phegopteris, Asplenium adiantum-nigrum, Ceterach, Ophioglossum, Allosorus, Cystopteris fragilis, Lycopodium clavatum, L. selago,* and *Equisetum maximum*]. N.H.J., 15th March 1893, p. 31.

P. G. Ralfe. Isle of Man.

Notes on Manx Plants [anent *Scolopendrium vulgare, Asplenium *marinum, A. adiantum-nigrum, Adiantum capillus-veneris, Lastræa oreopteris, Osmunda, Allosorus, Pteris,* and 'Mountain Sweet Fern']. Sci. Goss., May 1892, pp. 109-112.

Walter W. Reeves. York N.E.

***Chara vulgaris* (L.) var. *longibracteata* (Kuetz.) [near Middleton,** Pickering, Aug. 1886]. Nat., Aug. 1891, p. 252.

J. H. Salter, N. Neave. Derbyshire, Cheshire.

On the Derbyshire Border [of Cheshire, near Macclesfield, were noted *Polypodium dryopteris* and *P. phegopteris*]. N.H.J., 15th Sept. 1890, p. 102.

W. H. Satterthwaite. Westmorland.

[*Lastræa rigida* from Kendal district, sent to B. B. LeTall]. N.H.J., 15th Nov. 1890, p. 151.

W. A. Shuffrey. York Mid W.

[List of] The Flowering Plants and Ferns of Littondale [in Mid-West Yorkshire; a brief description of the dale and its strata precedes an enumeration of the species, with numerous annotations; including 19 ferns, *Selaginella selaginoides, Lyc. selago, Equ. sylvaticum* and *E. palustre*]. Nat., Feb. 1891, pp. 51-61.

W. A. Shuffrey. York Mid W.

***Botrychium Lunaria* in Wharfedale [at Troller's Gill, on Arncliffe** Clouders (1,200 feet), and between Arncliffe and Hawkswick, also at Oughtershaw]. Nat., Aug. 1892, p. 249.

W. A. Shuffrey. York Mid W.

The Flowering Plants and Ferns of Littondale [enumerating 19 ferns, 2 lycopods, and 2 equisetids, with annotations; reprinted, with additions, from 'The Naturalist' for Feb. 1891]. Littondale: Past and Present. . . . Leeds . . . 1893 [square 8vo].

MATTHEW B. SLATER. YORK, S.E., N.W., MID W.

***Ceterach officinarum* in the East Riding of Yorkshire [truly wild** on a wall in Langton village; notes are also given as to the Appersett, Upper Teesdale, Settle, and Malham stations]. Nat., April 1890, p. 107.

M. B. SLATER. YORK S.E.

[Ferns observed by] the Yorkshire Naturalists' Union on the Wolds [at Sledmere and York Dale, 3rd Aug. 1891; *Athyrium filix-fœmina*, *Lastræa filix-mas*, and *L. dilatata*]. Nat., Oct. 1891, pp. 304-305.

M. B. SLATER. YORK N.E. AND S.E.

Report on Yorkshire Botany for 1880-91 [misprint for 1890-91]. *Cryptogamia* [mentions *Ceterach officinarum* (Langton, York S.E.), *Equisetum maximum* var. *serotinum* (Forge Valley, York N.E.)]. Nat., April 1892, pp. 108-110.

C. E. S[TANSFIELD]. WESTMORLAND OR YORK N.W.

Holiday Finds [at Hell Gill; *Lycopodium clavatum* and *L. alpinum*]. N.H.J., 15th Oct. 1892, p. 108.

J. A. ERSKINE STUART. YORK MID W.

[Ferns observed by] the Yorkshire Naturalists' Union at Grass-ington [on 20th June 1891; *Asplenium viride*, *A. trichomanes*, *A. ruta-muraria*, and *Scolopendrium*]. Nat., Sept. 1891, pp. 265-6.

THOMAS F. WARD. YORK N.W.

[Ferns observed by] the Yorkshire Naturalists' Union in Upper Swaledale [2nd to 4th Aug. 1890; *Polypodium calcareum* and *Asplenium viride*]. Nat., July 1891, p. 202.

CHARLES WATERFALL. YORK N.E.

[Ferns observed by] the Yorkshire Naturalists' Union at Coxwold and Byland [in Sept. 1892; *Lastræa filix-mas*, *L. oreopteris*, *L. spinulosa*, *L. dilatata*, *Lomaria spicant*, *Athyrium filix-fœmina* (crested var.), *Scolopendrium*, *Polystichum aculeatum*, *Polypodium vulgare*, *P. phegopteris*, *Polystichum angulare* and *Equisetum maximum*, with indications of locality]. Nat., Dec. 1892, p. 353.

WILLIAM WHITWELL. YORK N.W. AND N.E.

Flowering Plants and Ferns of Upper Swaledale [criticism of J. G. Goodchild's records of *Polystichum lonchitis* and *Hymenophyllum tunbridgense*; reference also made to *P. aculeatum* v. *lonchitidioides* and *Hymenophyllum wilsoni*; stations in adjoining counties given]. Nat., Oct. 1890, pp. 305-306.

WILLIAM WHITWELL. YORK S.E., CUMBERLAND, WESTMORLAND.

East Riding Records [for *Lycopodium annotinum* at Buttercrambe Moor Wood (B. B. LeTall) being first record for Yorkshire; known also in Cumberland and Westmorland]. J. of Bot., July 1892, p. 217.

W. W[HITWELL]. YORK S.E.

School Natural History at York [reviewed, with mention of *Lycopodium annotinum* in East Yorkshire, new to the county; *Polypodium dryopteris* and *P. phegopteris* in Buttercrambe Moor Wood]. Nat., Sept. 1892, p. 280.

WILLIAM WHITWELL. YORK N.W., MID W., AND S.W.

West Yorkshire Records and Notes. From the Herbarium, Catalogues, etc., of the late Mr. John Tatham, of Settle [giving notices of *Hymenophyllum unilaterale*, *Blechnum*, *Athyrium filix-fœmina* var. *rhæticum*, *Scolopendrium*, *Lycopodium alpinum*, *L. selago*, and *Equisetum hyemale*]. Nat., Feb. 1893, p. 40.

E. M. WOOD. YORK MID W., LANC. S.

Botanical Work of the Ingleton, Bolton Abbey, and Ashurst Beacon Excursions [*Polypodium dryopteris*, *Lastræa rigida*, *Asplenium*

viride, A. trichomanes, Scolopendrium, Blechnum, Cystopteris fragilis, Botrychium, Ophioglossum, Lycopodium clavatum, L. selago, L. alpinum, and *Polypodium phegopteris* noted at Ingleton, 5th June 1889; and *Equisetum sylvaticum* at Ashurst Beacon, Lanc. S.]. Proc. Liverp. Nat. F. Club for 1889, publ. 1890, pp. 40-43.

T. W. Woodhead. York S.W.

[Ferns, etc., observed by] the Yorkshire Naturalists' Union at Penistone and Dunford Bridge [9th July 1892; *Equisetum palustre* and var. *polystachyum*, *E. limosum*, and *Polypodium vulgare*]. Nat., Sept. 1892, p. 258.

NOTE—ORNITHOLOGY.

A Hungry Jay.—The irruption of Jays (*Garrulus glandarius*) in large numbers in Dumfriesshire, and the consequent notes in the papers has brought back a curious sight I once witnessed. In the winter, 1890-91, the snow and frost lasted long, as readers may remember, and the birds fared badly. I was then living in a house about which were many trees and large shrubberies, with a wood only a few hundred yards distant. There was no other house for a quarter of a mile or so, and we had birds in quantity. It was our custom to hang bones and fat from strings fastened to a large lilac on a rockery at the back of the house. These delicacies were for the Tits, Thrushes, Blackbirds, Starlings (they lived in a disused pigeon cote), and an occasional Rook came and tried to steal. In the wood were one, if not two pairs of Jays. One, a male bird, visited the 'tit-tree' but dare not attack the swinging meat, for the Blackbirds and Sparrows kept him busy.

One morning, on looking out of a window opposite the lilac, I saw the Jay in the tree, a noisy Blackbird also, much excited. The Jay, after a feint at *it*, swooped at a piece of fat, which had a line of lean through it. The aim was bad, and the result, a blow on the right eye. Again it tried, and knocked off a scrap; next it managed to fix its beak and so got a mouthful, for the bit, cut through, came off. After several ineffectual attempts, it seized the lump, while fluttering. To its intense surprise, the lump would not accommodate itself to even a Jay's throat, neither would it come back, and for a second or two I thought the bird would choke. But no, after almost frantic straining, down went the meat and the Jay was caught; the string had a knot below the meat and was tied at the other end to the tree. Now came a struggle; the only foothold was a branch occupied by the Blackbird, who made as much noise as possible, and would not allow any other bird on its perch. So the Jay had to swing and flutter as best it could. All the birds in the trees near by joined in a chorus and plagued the prisoner by flying about it. It pulled and struggled, and opened its beak to its widest extent, and it seemed, unless the string was cut, the Jay must succumb. The bird gasped, and I thought it done for, but one final effort loosened the tie to the tree and the victorious Jay fell suddenly, very much dazed. Shortly it recovered, and flew away slowly with the string hanging from its beak. The whole act lasted only a few moments. The cord, I suppose, would ultimately be disgorged. A Jay several times afterwards visited us; he never again fell into temptation.

In regard to the distribution of the species in North Lancashire—or perhaps Lancashire is the better way to put it—Mitchell, 'Birds of Lancashire,' Ed. 2, says, 'Resident, . . . found throughout . . . the county from north to south.' Macpherson, 'Fauna of Lakeland,' says practically the same for his Lakeland area, and points out that immigration from the Continent in winter is not infrequent. In all this there is no located instance. Besides my Jays from the outskirts of Ulverston, I have seen one near Cartmel, on the fringe of the Holker Woods.—S. L. Petty, Ulverston, 17th Jan. 1898.

Naturalist.

LINCOLNSHIRE COAST BOULDERS.

F. M. BURTON, F.L.S., F.G.S.

Gainsborough.

During a short stay at Sutton-on-Sea on the east coast of Lincolnshire last August, I met with a few erratics of some interest, on the shore; and, for the account of them which follows, I am mainly indebted to Mr. T. Sheppard, of Hull, and the Rev. W. Tuckwell, Rector of Waltham, who have most kindly examined and described them.

The specimens selected, 20 in number, Mr. Sheppard says, 'are very interesting, and show a state of things similar to that at Spurn'; and though augite-syenite, shap granite, and typical rhomb-porphyry, are not represented amongst them, he feels confident that all three will be found in the locality.

These erratics extend for miles along the coast to the south, and are more or less in evidence, according as the sand, for which the beach is famed, is scoured off by the tides or heaped up by the winds: the one exposing the other hiding them from view. On the north, where the sea retires to a considerable distance—as at the Saltfleet flats and other places where the winds and waves have less power—fewer fragments are met with. In such localities they are covered over by long stretches of sand and mud, which are seldom disturbed, and over which the sea only creeps occasionally, when the higher tides are on.

As these erratics consist, for the most part, of small stones and pebbles on the beach (as at Holderness), and are not isolated boulders, or boulders of a large size, I have not thought it necessary, except in a few instances, to give their measurements. Those not given vary from three inches to not much more than an inch in superficial length.

Their description is as follows:—

No. 1. An igneous rock, neither granite nor typical gneiss, but something between the two. It contains rounded grains of milky quartz, with large black crystals of hornblende and small flakes of golden-coloured mica. Iron and other minerals occur in it, but in very small quantities. Probably not British.

No. 2. A very beautiful, coarse gabbro ($3\frac{3}{8} \times 1\frac{3}{4} \times \frac{7}{8}$ inches), like that on Carrock Fell described by Harker in Q. J. Geol. Soc.

No. 3. A very good example of hornblende schist, with a thin vein of quartz running through the middle. Probably

Scandinavian. Common on Holderness coast, and also found at South Ferriby Cliff.

No. 4. A gabbro (5 × 2¼ × 1¼ inches) resembling No. 2, but finer than it.

No. 5. A rhomb-porphyry (not known as such by English geologists)—'rhomben-porphyr of Brögger'—a fairly well known rock north of the Humber. Mr. Sheppard has specimens from Burstwick and the Holderness coast. This specimen is Norwegian, there being nothing like it in England *in situ*.

No. 6. Amygdaloidal lava; each amygdule being a perfect agate and exceedingly pretty when examined under a good lens. This may come from anywhere, rocks of the type being found in several localities. It is well known north of the Humber.

Nos. 7 and 8. Porphyrites of a somewhat similar type, resembling those from the Cheviots, but possibly Norwegian.

No. 9. Millstone grit; probably from North-West Yorkshire. It contains small pebbles of quartz, felspar, and hæmatite; from which latter mineral it gets its prevailing colour.

No. 10. An igneous, pink, saccharoid rock (3¼ × 2 × 1¾ inches), difficult to describe; composed principally of a soft sandy substance, with crystals of mica quartz and felspar; probably very much weathered.

No. 11. Resembling No. 1, though more compact and more waterworn.

No. 12. Impure quartz, coloured with iron. Probably from same neighbourhood as No. 9.

No. 13. A very interesting specimen—not a granite, but a palæozoic, sedimentary rock, altered through shearing; the large grains of quartz being elongated in the direction of the shear. This direction can also be ascertained by the manner in which the sides of the specimen, once perpendicular, are distorted,—the large flat surface representing the original bedding. This specimen contains some beautifully tinted quartz specks, which resemble moonstones in appearance when wet. It is a palæozoic rock, and may come from the Lake District, but its habitat is not certain.

No. 14. A rock composed of large crystals of hornblende and quartz (5 × 3 × 2 inches), with, here and there, fairly large crystals of golden mica; it occurs at times on the coast north of the Humber.

Nos. 15, 16, and 17. The two first are mica schists, while the last, No. 17, is either a mica or hornblende schist, probably Scandinavian.

No. 18. A beautiful example of a Scandinavian, garnetiferous mica-schist. The garnets stand out boldly, though they have got bruised with knocking about on the beach.

No. 19. A much-weathered specimen; apparently a garnetiferous schist, showing the holes which the garnets, which have decomposed, once occupied.

No. 20. Carboniferous limestone, metamorphosed by coming in contact with a dyke of igneous rock. Several examples of this kind are to be found in the Lake District, Teesdale, etc. On applying hydrochloric acid to this rock it slightly effervesces.

With regard to two of the above specimens, Mr. P. F. Kendall, of the Yorkshire College, Leeds, who is examining them, thinks they may be of more than ordinary interest; and should this turn out to be the case, an account of them will appear hereafter.

Mr. Sheppard, in his report, further remarks that 'though the probability is they have come from the boulder clay, the fact must not be lost sight of that they are beach specimens' in recording them.

This remark I thoroughly endorse and appreciate; and having regard, also, to the doubts that have been thrown out as to these rock fragments occurring where they are found in a natural way, I have gone somewhat fully into the matter.

I might, I think, be excused if I dismissed the theory of the stones in question having been thrown out 'as ballast by the fishing boats' as untenable, but as this fact has been stated, recently, in the pages of 'The Naturalist,' I am bound to take notice of it. There are but few fishing boats at Sutton—not half-a-dozen, I believe—and no ports or landing-stages exist on this part of the coast. Occasionally an old hulk floats ashore to be broken up, and from it, possibly, some ballast might be thrown out, but the erratics I allude to are not of this nature. They consist, as I have said, of stones and pebbles (such as are found on the Holderness coast), and they are met with, not only at Sutton, but all along the shore to Chapel, where they abound, and on to, and beyond, Skegness; and it would require fleets of ballast-discharging boats to meet such a supply. On this point, see also the Geol. Mag. (1894, pp. 334, 477, 565, where Mr. Harker has fully discussed the subject).

Before going further, let me again call attention to the fact that the display of stones on this coast depends very materially on the state of the sands. I have been at Sutton frequently, and never saw the stones in such quantities as in August last,

owing to storms having swept off the sand. The stones are mostly met with high up, near the sea-bank, where the sand is dry and easily blown away; and not so much at low water, where the sand is wet and consequently more stable.

As to the existence of the stones themselves, Mr. Benjamin Simons, a well-known resident of Sutton, writing to me on the subject, says, 'There are quantities of stones all along the coast. At times they lie in beds, so that you could quickly fill a can; at other times they are more scattered, and yet again at other times they are covered with sand.' Another correspondent from the same place, Mr. W. Milgate, one of the Sutton boatmen, speaks of abundance of stones, and says that 'years ago people used to lead them away to *boon* the roads with; now they are not allowed, so of course it accumulates,' and he adds 'there is none to be seen now, the great storm of November 29th washed about half the hill away, so covered the stones up.' A further correspondent, the Rev. E. W. Watson, the Vicar of Chapel St. Leonard's, speaks of the stones being abundant on Chapel shore (which I can corroborate), 'with amber, jet, ammonites, and belemnites'; and Mr. Alfred Harker, F.G.S., of St. John's College, Cambridge, and the Geological Survey of Scotland, while speaking generally of the care needed in dealing with boulders found loose on the beach, or on the surface of the country, remarks that he knows but little of the Lincolnshire coast, and says—'I take the Holderness coast, which I know better. Norwegian boulders are plentiful on the beach in some places, and I have no doubt that they belong to the immediate neighbourhood. . . . Going into a new district . . . I should particularly distrust isolated groups of boulders, whether on the beach or inland. I do not feel competent to discuss the matter for the neighbourhood of Sutton, etc. Of course, there is no reason why you should not get ice-borne Norwegian boulders there. They are plentiful on the Norfolk coast, and even come as far as to Cambridge.' As regards the Lincolnshire coast boulders, Mr. Harker calls attention to the possibility of the stones being brought where they are by the 'powerful tidal scour (from N. to S.).' I cannot, however, agree with him on this point, at all events not to any great extent, and on stating this, he wrote again, as follows: 'The boulders on the Lincolnshire shore are, in my view, probably derived to a large extent from Holderness. This tidal action cannot, I think, properly be left out of consideration. Of course, there may be local circumstances at the localities you have stated, which I may

not be able to allow for.' (As this question is one of considerable interest, I hope we may hear more about it from others who are acquainted with the subject.)

I give the above extracts in proof of these erratics not being brought where they are by the agency of man; but can anyone doubt the natural occurrence of ice-borne rocks on this coast, where the boulder clay, represented here by the Hessle and Purple clays, 'The newer boulder clay,' is so much in evidence? Mr. Jukes-Brown, in Memoir 84 of the Geol. Survey, 'The Geology of part of East Lincolnshire,' says 'Deposits of glacial age cover a large portion of the area, and underlie the whole of the marsh land'; and he gives many instances of wells—as at Saltfleet, Mablethorpe, Theddlethorpe, Sutton, and Skegness—in support of this. On looking, also, at the Geological Survey Map of the district, it will be seen that a vast area of this 'newer boulder clay' lies exposed at the foot, and on the east side, of the wolds; and that it is covered over, along the shore, by a band of 'post-glacial deposits,' described in the Survey as 'silt and clay,' through which, in places, as at Thorpe near Sutton, at Hagnaby, Markby, Huttoft, Mumby, Willoughby, and elsewhere in the neighbourhood, the boulder clay stands out.

To what height this 'newer boulder clay,' at one time, rose above the chalk beneath, may be guessed at by the cliff at Cleethorpes, before it was converted into gardens. Imagine this cliff, not merely before it was cut down, but when first deposited and before it had suffered denudation, continuing all down the land to the east of the wolds; and where has all the clay, of which it was composed, with its burden of erratics, gone to? Part, no doubt, lies buried beneath the sea, while part must remain scattered over the land and on the shore, forming no mean portion of the covering band of 'post-glacial' clays alluded to above. What wonder, then, that ice-borne erratics should be found throughout the district, on shore and inland? Would it not rather be a subject for wonder if we did not find them there?

Brick-pits, where sections can be studied, are plentiful in these 'post-glacial' clay deposits, as a reference to the Survey Memoir and Map will show; and though, when the boulder clay beneath was scattered, the stones it contained would naturally get separated from their matrix, a careful search in these pits and in the land around, would doubtless bring many of them to light.

Mr. Jukes-Brown, in the Survey Memoir, speaks of a brick-yard in these 'post-glacial' beds half a mile N.N.E. of

Hogsthorpe, containing a bed of hard, greyish silt, full of stones; and those who were present at the first excursion of the Lincolnshire Naturalists' Union at Mablethorpe in 1893, will remember coming across a disused brick-pit near the coast at Theddlethorpe, where stones were seen imbedded in the unworked clay on the pit sides, while a boulder of considerable size lay on the margin. This pit was thought at the time to belong to the boulder clay, and I so recorded it in a note after the meeting, but on reference to the Memoir and Map, I see that this was an error, and that the clays in it belong to the higher 'post-glacial' beds.

These are two cases bearing on the question, and no doubt many others will be found when proper search for them is made.

It will be interesting to add that on one occasion I picked up on the shore near Sutton, at low tide, a polished, oval, flint instrument, the surface of which is nearly covered by an incrusting Polyzoon (*Membranipora lacroixii* Hincks). This relic may have belonged to one of the old-world hunters in the submerged forest which once grew on this part of the Lincolnshire coast; the trees of which, extending for miles—some of them prone on the ground, and others with their broken trunks still standing where they grew—may be seen, skirting the shore when the tides are low.

16th February 1898.

NOTE—LEPIDOPTERA.

***Vanessa antiopa* at Croxby, Lincolnshire.**—On Good Friday, 8th April 1898, at Croxby Woods, I captured a very fine Camberwell Beauty (*Vanessa antiopa*).—G. SHELTON, Abbey Park Road, Grimsby, 17th April 1898.

NOTE—COLEOPTERA.

Rare Beetles near Scarborough.—On 7th April I took a specimen of the rare *Hydroporus rufifrons* at Seamer. Hitherto it had only been recorded in Yorkshire from two localities in the Central Vale, Askham and Strensall, but the latter locality has long been destroyed by drainage. The specimen is almost jet black, the rufescent patches at the base of the elytra, so characteristic of the species, being barely discernible. It was accompanied by the equally rare *H. oblongus*. These ponds at Seamer seem to bear exactly the same relation to the Vale of Pickering that Askham Bog does to the Vale of York—a solitary refuge for the water insects which prevailed throughout the respective vales before they were drained. I also took at Seamer *Chætarthria seminulum* (new to N.E. Yorkshire). Last year I took in Forge Valley two rarities, *Orsodacna cerasi* and *Gnathoncus nannetensis*. *Bradycellus distinctus* (of which a single specimen was taken at Saltburn by Mr. Thompson) has turned up in plenty in Raincliff Wood, near Scarborough, so that Canon Fowler's statement that it is 'very rare' in the North of England must be modified.—W. C. HEY, West Ayton, 9th April 1898.

SOME HEMIPTERA-HETEROPTERA OF THE ISLE OF MAN.

JAMES EARDLEY MASON,
Norfolk House, Lincoln.

Taking a holiday in the Isle of Man in September 1887, I did a little collecting about Castletown.

At Athol Bridge in the parish of Malew, I found

Pentatoma verbasci L. Abundant on furze (*Ulex europæus*) and sloe (*Prunus spinosus*).

Piezodorus lituratus Fab. Plentiful on furze.

Stygnus arenarius Hahn. One.

Nabis rugosus L. Several.

Salda saltatoria L. A few.

Anthocoris sylvestris L. (*nemorum* L. et auct.). Excessively abundant, specially on sloe. Many adult specimens much paler than the type.

Miris lævigatus L. Some.

Megaloceræa erratica L. One.

Monalocoris filicis L. Abundant on ferns, Bracken (*Pteris aquilina*) and Shield-fern (*Aspidium filix-mas*).

Lygus pabulinus L. Some.

Lygus pratensis Fab. Abundant.

Lygus cervinus H.-Schf. One.

Ætorhinus angulatus Fall. A few.

Mecomma ambulans Fall. A few.

In the same parish, on the road to Peel, besides some of those noted above, I took

Anthocoris nemoralis Fab. In plenty.

Anthocoris sarothamni D.&S. on broom (*Spartium scoparium*) and furze.

Between Castletown and Port St. Mary I met with

Velia currens Fab.,

And at Langness

Scolopostethus decoratus Hahn.

Stygnus pedestris Hahn.

Piesma quadrata Fieb. In extraordinary abundance among the short vegetation fringing the sandy road to Derby Haven.

May 1898.

Orthostira parvula Fall. Several.

In Colby Glen, in addition to several of the preceding species, I came across

Monanthia cardui L.

Nabis ferus L.

Miris calcaratus Fall.

Lygus pastinacæ Fall.

Lygus kalmii L.

A few Coleoptera still await determination.

LINCOLN, *2nd Feb. 1898.*

BOOK NOTICE.

Descriptive List of the British Anthomyidæ. By **R. H. Meade,** F.R.C.S. In two parts—price 1s. each. (London: Gurney and Jackson, 1, Paternoster Row, London, E.C., 1897). British Dipterists should be grateful to Mr. Meade for throwing light—and a clear light—upon one of the most difficult families belonging to the Order they study. In handy form, and at an extremely low cost, the present list gives a precise description of every British species, sufficiently full in the majority of cases to enable the student of even limited experience to identify his captures with tolerable ease. One point we would refer to unfavourably, and that is the faulty character of some of the analytical tables, due to their imperfect construction. It is a pity, moreover, that the proof-sheets were not read more carefully, as the number of misprints is exceedingly large. In spite of these criticisms, however, we must say that the publication of such a list is a boon, and we hope that the author may soon issue similar guides to other difficult groups, or that other competent authorities may follow his example. —P.H.G.

NOTE—BOTANY.

***Ranunculus lenormandi* in the Trent Basin of Yorkshire.**—Yesterday I gathered at Martin Beck near Tickhill an aquatic *Ranunculus* with round leaves, having 3-5 lobes, widening from the base; small 5-veined petals, larger than the calyx; leaves not spotted, and opposite; lobes broad, with 2-3 notches; broad ½-adnate upper stipules; stamens 9-10; inner edge of carpels curved. This appears to me to be undoubted *R. lenormandi* Schultz. If this be so, the vertical range of this species as recorded in 'Flora of West Yorkshire,' '350-1,800 feet,' must be increased to 150-1,800 feet, and it must be added to the Trent Basin florula. Growing near it were *Myrica* and *Narthecium*.—H. H. CORBETT, 9, Priory Place, Doncaster, 22nd April 1898.

NOTES AND NEWS.

By the sudden decease, on the 30th March, of Mr. James I'Anson, the Darlington and Teesdale Naturalists' Field Club loses a valued President, and the Technical College there its Director of Studies. Mr. I'Anson was but 53, having been born at Gateshead in 1845. He interested himself in geology and mineralogy, was F.G.S., and had been on the Council of the Mineralogical Society. Several papers on these subjects from his pen have appeared in the Mineralogical Magazine, and in the Proceedings of various Engineering Societies.

NOTES ON COLEOPTERA OF THE FAMILY STAPHYLINIDÆ IN N.E. YORKSHIRE.

M. LAWSON THOMPSON,

Saltburn-by-the-Sea.

Since the publication of that portion of the List of the Coleoptera of Yorkshire relating to the Staphylinidæ, I have been able to add a number of species to those there mentioned, and new localities for some of the insects for which the records were found to be deficient.

These beetles are here given an account of in the form of short notes respecting their occurrence in the county, as far as my experience yet goes. I have marked with an asterisk the 40 species which do not find a place in the published list at all; whilst with regard to the remainder, the new locality or localities will serve in each case to supplement the single record already existing.

My only reason for the insertion in these notes of so many common insects is that the county list is still in process of formation, and not only of publication. Many of the Staphylinidæ are difficult to determine satisfactorily, and it is with gratitude that I acknowledge having received much valuable assistance from Messrs. W. G. Blatch and E. A. Newbery in this respect.

****Aleochara succicola*** Thoms. Common on the coast at Saltburn, in dead birds. Mr. Champion has pointed out ('Entomologists' Monthly Magazine,' May 1897) that the insects standing as the common *mæsta* Grav. in British collections must be referred to this species, the true *mæsta* Grav. being a much rarer insect.

****Aleochara grisea*** Kr. Among sea-weed and shingle on the coast; Saltburn, common; shore of the Tees, near Redcar.

****Aleochara obscurella*** Er. Common on the coast at Saltburn.

Aleochara algarum Fauv. Saltburn, on the coast.

Oxypoda opaca Grav. In decaying sea-weed on the coast at Saltburn.

Oxypoda alternans Grav. Saltburn, in autumn; Arncliffe Wood, Glaisdale.

****Oxypoda longiuscula*** Er. Saltburn.

Ocalea castanea Er. Saltburn, at roots of grass on the sea-banks.

May 1898.

****Calodera umbrosa*** Er. In 1896 I took a specimen of this rare insect at the foot of the sea-banks at Saltburn.

Chilopora longitarsis Steph. Saltburn.

Homalota pagana Er. Saltburn, on herbage in a wood, September 1897.

****Homalota volans*** Scrib. Common on the borders of the stream in Saltburn Wood.

****Homalota vicina*** Steph. Common at Saltburn.

****Homalota halobrectha*** Sharp. Saltburn, common under sea-weed on the coast.

****Homalota pilicornis*** Thoms. Under the bark of a rotting fir stump in Saltburn Wood; one specimen early in October 1893. A rare insect.

Homalota circellaris Grav. Under stones on Stanghow Moor, near Saltburn; Glaisdale Moor.

Homalota analis Grav. Common at Saltburn.

****Homalota aquatica*** Thoms. (***subænea*** Sharp). In a sand-pit on the sea-banks at Saltburn.

****Homalota fungicola*** Thoms. Saltburn, common in decaying fungi.

****Homalota oblita*** Er. I took a specimen of this local species on the coast at Saltburn last June. It does not appear to have been previously met with in the northern counties.

****Homalota sericea*** Muls. In vegetable refuse on the shore of the Tees near Redcar.

****Homalota cauta*** Er. (***parva*** auct.). Saltburn, common.

****Homalota atramentaria*** Gyll. Saltburn; banks of the Tees near Redcar. Common.

****Homalota muscorum*** Bris. Saltburn.

****Homalota fungi*** Grav. Common at Saltburn.

****Gnypeta labilis*** Er. Saltburn, on the margins of ponds and streams. Common.

Xenusa (Myrmecopora) sulcata Kies. Saltburn; common among shingle on the coast at highwater mark.

****Xenusa (Myrmecopora) uvida*** Er. I took this species on one occasion with the preceding insect, May 1896.

Falagria sulcata Payk. Saltburn, in garden refuse.

Autalia rivularis Grav. In a decaying fungus at Saltburn.

****Gyrophæna fasciata*** Marsh. Saltburn Wood, in decaying fungi, 1895.

****Gyrophæna minima*** Er. In decaying fungi, Saltburn Wood ; Arncliffe Wood, Glaisdale.

Gyrophæna lucidula Er. I met with a single specimen of this local species by sweeping on the margin of a stream at Saltburn, end of June 1896.

****Sipalia ruficollis*** Er. Saltburn, in a fungus on a tree, September 1897.

Bolitochara lucida Grav. Taken with the preceding insect.

Bolitochara obliqua Er. Also met with on the same occasion and in the same locality.

Myllæna brevicornis Matth. Among gravel by the stream in Saltburn Wood, August 1897.

Hypocyptus longicornis Payk. Saltburn, on the sea-banks.

****Hypocyptus seminulum*** Er. Saltburn, on the sea-banks ; one specimen in August 1896.

****Hypocyptus læviusculus*** Mann. Common on the sea-banks at Saltburn and on the sand-hills at Redcar.

Tachyporus brunneus F. Banks of the Derwent at Langdale End.

****Tachinus laticollis*** Grav. Under a stone on an elevated portion of Stanghow Moor, September 1896.

****Mycetoporus nanus*** Er. On the sea-banks at Saltburn.

****Mycetoporus angularis*** Rey (***reyi*** Pand.). Saltburn sand-hills ; one specimen at the end of September 1896.

****Mycetoporus splendidus*** Grav. I took a specimen of this species blowing about a sand-hollow on the coast at Saltburn, in April 1896.

Quedius puncticollis Thoms. At the foot of the sea-banks at Saltburn, 1897.

Quedius semiæneus Steph. On the sand and marram grass on the Saltburn sand-hills.

****Philonthus scutatus*** Er. Under stones on an elevated part of Stanghow Moor, near Saltburn. A rare northern species.

Philonthus longicornis Steph. (***scybalarius*** Nord.). In carrion, on the sea-banks at Saltburn ; and on the shore of the Tees near Redcar.

****Leptacinus parumpunctatus*** Gyll. On the coast at Saltburn, early in October 1896.

Stenus pusillus Er. Among gravel on the margin of the stream in Saltburn Wood.

Stenus declaratus Er. Saltburn.

****Bledius bicornis*** Germ. (***ruddii*** Steph. ?). Banks of the Tees near Redcar, June 1897. Canon Fowler does not consider this species to be identical 'with the *B. ruddii* of Stephens, which was so named by him from specimens taken by the Rev. G. T. Rudd in "Coatham Marshes, Yorkshire"' (Brit. Col., vol. ii., p. 367). I have no doubt but that Rudd's specimens were found in the same locality as that in which I have now taken *B. bicornis*.

****Oxytelus maritimus*** Thoms. Saltburn, among decaying seaweed and refuse on the coast. Common.

****Oxytelus complanatus*** Er. Saltburn, on the coast.

Ancyrophorus omalinus Er. In flood-refuse by the stream at Saltburn, April 1897.

****Trogophlœus pusillus*** Grav. Saltburn.

Trogophlœus bilineatus Steph. Banks of the Tees near Redcar.

Trogophlœus corticinus Grav. Among gravel by the stream in Saltburn Wood.

****Homalium allardi*** Fairm. Saltburn, in dead birds on the coast, June 1897.

****Homalium pusillum*** Grav. Under bark of fir at Saltburn, May 1897.

****Homalium cæsum*** Grav. Saltburn. Common.

****Homalium oxyacanthæ*** Grav. Saltburn, on the coast.

Anthobium minutum F. Saltburn.

****Anthobium ophthalmicum*** Payk. In Kilton Wood, near Saltburn. Common. July 1897.

****Megarthrus denticollis*** Beck. On the sea-banks at Saltburn, July 1896.

Megarthrus depressus Lac. Saltburn, on the sea-banks.

Megarthrus sinuatocollis Lac. Saltburn Wood.

NOTE—FUNGI.

Box Fungus at Carlisle.—Looking into a florist's window during a visit to Carlisle in January last I was surprised to find some sprays of box, grown in the locality, whose leaves were freely dotted over with the parasitic micro-fungus *Puccinia buxi* DC. Although the parasite is said to be not uncommon, I find on looking up my records I have only once collected it myself, though I have often searched for it. On that occasion, Easter 1887, it occurred in large quantities in my brother's garden at Hurstmonceux, in Sussex. Perhaps, therefore, the circumstance may be worthy of record.—HILDERIC FRIEND, Ocker Hill, Tipton, 1st April 1898.

NEOLITHIC LIFE IN LINCOLNSHIRE.

JOHN H. COOKE, F.G.S., F.L.S., etc.,
Vice-President of the Lincolnshire Science Society.

SECOND PAPER.

For previous paper see 'The Naturalist,' March 1898, pp. 77-79.

ANOTHER class of implement that is found in comparative abundance in the county along the western flanks of the Oolitic escarpment and of the Fenland is that to which the generic term 'celt' has been given. It includes implements that were fashioned for use in the chase as well as in war, and it is therefore characterized by variety of design and of size. As a rule the Lincolnshire weapons are similar to those found in Yorkshire; they are wedge-shaped, and are so fashioned as to allow of being either bound to a handle with a thong or withey, or fixed in a fork or split-handle with clay or other cement. All of them are large, symmetrical, and beautifully polished. I have in my collection two remarkably fine specimens that I obtained from the surface deposits of a field that is situated about 200 yards to the north of Killingholme Church. One is semi-elliptical in section, being flat on one side and convex on the other. It measures 5½ inches × 2½ inches × 1½ inches. It has been made out of a dolerite boulder that had probably been obtained from the glacial beds in the neighbourhood, and notwithstanding the great compactness of the rock, it was carefully finished and polished. A similar implement was found by a neighbouring farmer near the same place, but it had a perforation in the upper half that had evidently been intended for a handle. My second specimen is of the ordinary type of celt. It is made of horn-stone; it measures 4½ inches × 2½ inches × 1 inch, and is well polished.

Brigg and neighbourhood has supplied considerable numbers of similar implements. The Rev. J. Wyatt, of Broughton, has in his collection several that are very similar to the Killingholme specimens, all of which have been found in his parish. The survey of the Ancholme Valley, under the superintendence of Mr. A. Atkinson, the engineer to the Commissioners, has led to the discovery of numerous relics of the Neolithic as well as of the succeeding Bronze and the early Iron Ages. Among the specimens now in Mr. Atkinson's possession is a celt of the usual shape, measuring 7 inches × 3 inches × 1¼ inches, fashioned out of a boulder of exceedingly compact limestone. Another, which he obtained from Coal Dyke End, is made of hornstone, and measures 5½ inches × 2⅜ inches × 1¼ inches.

These are the finest, but he has many others as well as a numerous collection that include flint arrow heads, barbed and unbarbed, scrapers, lance heads, bone implements, and relics of the Bronze Age. Many of his treasures have come from the warrens of Twigmoor. An interesting and unusual form of adze, which in some respects resembles the Killingholme weapon, was found on high ground in the neighbourhood of Grimsby. It is wedge-shaped, it has a rectangular base, and the thickened end is perforated for a handle. It is at present in the collection of Mr. Watkinson, of Grimsby. Redbourne, Kirton Lindsey, Manton, Risby, Appleby, Winterton, Scotton, and many other places in the north-west of Lincolnshire have yielded similar evidences of the former occupation of these areas by the old stone folk. Mr. E. Peacock has several celts that were found when laying the M. S. and L. railway near Kirton; and Mr. Max Peacock got together a fine collection from the district around Bottesford. It is noteworthy that, while all of the arrow heads are made of flint or chert, the greater number of the celts are fashioned out of hornstone. The same characteristic is observable of the weapons found in the south and south-east of the county. Hornstone was peculiarly suitable for the purpose, both on account of its toughness and durability, and for the abundance of the boulders of this rock that occur in the glacial beds, and in the ancient Trent gravels that lie scattered throughout the Trent and Witham basins. The boulders, probably, were derived from the Triassic pebble beds that occur *in situ* beyond Newark to the west.

Similarly shaped tools to those mentioned above have also been found at Reepham, Langworth, Cold Handworth, Lincoln, and other places in the neighbourhood. The Reepham implement is a fine example of the skill of these early artists. It was found whilst ditching, and was deposited by the Clerk of Works in the museum of the Grimsby Town Hall. Two fine specimens were found under similar circumstances at Cold Handworth. The larger of the two measures 7½ inches in length, and is the finest celt of Neolithic times that has yet been found in Britain. Both are now to be seen in the museum of the Science School, Lincoln.

In my own collection I have a similar weapon measuring 5 inches × 2¼ inches × 1 inch, which I obtained from Langworth; but though it is well polished it will not compare either in finish or design to that from Cold Handworth. The late Mr. Ruston obtained several specimens during the course of some excavations a few years ago near the Newport Arch at Lincoln, but as I have not seen them I am unable to give

details. The uses to which weapons such as these were put readily suggest themselves. They were adapted to purposes both domestic and militant, for the clearing away of the charred wood when canoe making, the skinning of animals and the felling of trees, as well as for defence and offence in tribal wars.

The records of these implements that have been forthcoming from the south of the county are not so numerous as those from the north. But this is because fewer observers have been at work on the subject; and I have no doubt but that, when greater interest is taken in these hoary relics of Lincolnshire's past by our South Lincolnshire folk, the superficial beds of that part of the county will render quite as good an account of themselves as those of the north have done.

When engaged on the geology of South Lincolnshire, Mr. Skertchley gave some attention to prehistoric remains, and he has recorded the finding of an unsymmetrical, rudely-chipped arrow head in the peat beds at Bourne; and also of two celts, the one at Edenham, the other at Kaye's Bridge. Both have been fashioned out of blocks of hornstone that had been obtained from the glacial beds in the neighbourhood, and both are neatly polished.

A polished flint celt measuring 5½ inches × 1½ inches at the butt and 2½ inches at the cutting edge was found at Digby, near Billinghay; and a finely-chipped arrow head was obtained from the clay at Chatteris. I have many other records and specimens; but these examples serve to indicate the general character of the implements and their distribution over the county. They do not, however, seem to occur in the same abundance in Lincolnshire as in contiguous counties. That Lincolnshire, with its exceptional advantages as a place for settlement should have been less thickly populated than, say, Yorkshire, would be remarkable, and it is not therefore improbable that, when the present inhabitants of the county have become more familiar with these relics and have learnt to recognise them when they see them, the number of records of the handicraft of Lincolnshire's Neolithic folk will be greatly increased.

The celts and arrow heads indicate that the old Lincolnians were hunters; there are also evidences to show that they were fishers. Surrounded as their settlements were by the Fenland and the Carrland lakes and morasses, some means had to be devised to enable them to cross these wastes of water. They made boats; and in the old forests and peat beds the remains of many of these have been preserved to this day. The most remarkable are those that have been found

at Kyme, Billinghay, Langtoft, Pinchbeck Barrs, Washingborough and Brigg. With one exception all of these are rude 'dug-outs,' consisting simply of an untrimmed tree, hollowed out; but that which was found at Pinchbeck Barrs was built of rough planks in a manner such as evidenced the possession on the part of the artisans of considerable constructive skill.

The boat which was found at Brigg, and which belongs to the former class, is specially interesting, both on account of its size and the geological horizon at which it was found. In the year 1886, the Brigg Corporation undertook the enlargement of their gasworks, and excavations were made for a gasometer. It was in this excavation that the boat was discovered.

Mr. Atkinson described it in a paper which he communicated to the Society of Antiquaries as 'being made out of one huge log of oak, which had been "dug out" or hollowed: the butt or root end being used for the stern.' The stern itself consists of a flat board which has been fitted into grooves on either side. The length of the boat over all is 48 feet 6 inches, and the width originally varied from 4 feet 3 inches at the bows to 4 feet 6 inches at the stern. While in use, this primitive vessel seems to have developed several rifts or cracks, and it says much for the ingenuity and resource of the people, who, with no other appliances than their rude stone celts and heated stones, were able to cut out this boat and repair the leaks with patches of oak and caulkings of moss.

The moss caulkings have been examined by Mr. H. W. Lett, who notes that one of the mosses used is the common Cushion Moss (*Thuidium tamariscinum*); while the other is *Hypnum triquetrum*, a moss that is now largely used in the London markets for making moss baskets. Remarking on the methods adopted by these ancient people, Mr. Atkinson says, 'It is inconceivable that the constructors of this vessel had the means of felling an oak tree, six feet in diameter. We must therefore conclude that the tree had completed the term of its natural existence, and had at last fallen through sheer old age. The workmen would find the tree hollowed to their hands, and the work would be finished perhaps by burning.'

The boat is now carefully preserved at Brigg in a house that has been specially built for it by Mr. V. Cary Elwes. The question as to its age opens up an interesting line of investigation, with the salient points of which I propose to deal in my next paper.

THE CONSTITUENTS OF THE NORTH LANCASHIRE FLORA, 1597(?)-1893.

LISTER PETTY,
Ulverston.

SIXTEENTH PAPER.

Tamus communis L. Clarke's First Record, 1597.

1830. Otley, Guide, ed. iv., 145. About Cartmel and Windermere Lake; and repeated **1835.** Watson, New Bot. Guide, i., 302. **1837.** Otley, Guide, ed. vi. Windermere only; and this repeated in all subsequent editions. **1861.** Phytologist, 237. Between Humphrey Head and Cartmel, C. J. Ashfield. **1864.** Linton, Lake Country, 329. 'Common,' no locality. **1864.** Naturalist, 39. In hedges on roadside through the fields to Cartmel, Leo Grindon. **1874.** J. of B., Miss E. Hodgson. Sea Wood, Bardsea, Mrs. Jas. Hodgson; Plumpton Woods; Leybarrow, near Penny Bridge; (West) face of Humphrey Head; roadsides about Grange. **1885.** Baker's Flora, 204. Frequent in woods and hedges in Furness, and round Windermere.

Asparagus officinalis L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Shore rocks near Grange. **1885.** Baker's Flora, 202. Miss Hodgson repeated. I saw one plant there on the railway embankment in 1882, J. G. Baker.

Polygonatum multiflorum All. C.F.R., 1562.

1796. Withering, ed. iii., 342-3. Woods at Bigland Hall, plentiful, Jackson; and repeated in all subsequent editions. **1805.** Turner and Dillwyn, Bot. Guide, ii., 367. Jackson repeated; at Holker, Woodward. **1835.** Watson, New Bot. Guide, i., 303. Jackson and Woodward repeated, but ascribed to 'B.G.' **1842.** Wordsworth, Scenery, 27. Woodward's locality repeated. **1861** (dated **1855**). Martineau's Guide, 187. Graithwaite Woods, F. Clowes. **1864.** Linton, Lake Country, 330. Woodward's locality repeated. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1885.** Baker's Flora, 203. Jackson, Woodward, and F. Clowes repeated.

Convallaria majalis L. C.F.R., 1597.

1796. Withering, ed. iii., 341. Roudsey Wood, plentiful, Jackson; and repeated in all following editions. **1805.** West, Antiq., ed. Close, 337. On the Hagg Hills, near Dalton, Atkinson. **1830.** Otley, Guide, ed. v., 144. On an island in Windermere. **1834.** Baxter, Phænog. Bot., i., 78. Jackson

repeated. **1837.** Otley, ed. vi., 149. As before, and near Skelwith Force; and in later editions. **1842.** Evans, Furness and Furness Abbey, 24. Atkinson and Otley repeated. **1842.** Wordsworth, Scenery, 47. Otley's first locality repeated by T. Gough as 'Holm Island.' **1843.** Jopling, Furness and Cartmel, 272. Jackson's and Atkinson's localities repeated; and Old Park Wood and Waitham Wood, Holker, W. Wilson. **1861** (dated **1855**). Martineau's Guide, 187. Jackson's locality repeated by F. Clowes. **1864.** Linton, Lake Country, 330. No locality. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. In the Park, north-west of Dalton, Mrs. Hart Jackson. **1885.** Baker's Flora, 202-3. Jackson, Atkinson, Wilson, and Mrs. Jackson repeated; Isles of Windermere, now almost extinct, F. Clowes; Pull-Wyke, Windermere, H. E. Smith; drawn from Skelwith by Miss Wilson. **1892.** Haviland, Distrib. Disease, 380. No locality.

Allium Scorodoprasum L. C.F.R., 1690.

1801. Withering, ed. iv., as *A. arenarium* Sm. At Pool Bridge, in Furness Fells, Jackson; and repeated in 6th and 7th editions (omitted in 5th) of Withering. **1805.** Turner and Dillwyn, Bot. Guide, ii., 367. **1835.** Watson, New Bot. Guide, i., 303. On authority of 'B.G.' **1869.** Eng. Bot., ed. iii., vol. 9, 207. County of Lancaster. **1874.** J. of B., Miss E. Hodgson. Jackson repeated; and in **1885.** Baker's Flora, 201. **1892.** Naturalist, 82. On the banks of the Lickle, near Broughton-in-Furness; bank of a ditch in a field near the Duddon, L. P.

Allium Schænoprasum L. C.F.R., 1777.

1744. Wilson, Syn., 255. Chivey Syke, in Cartmel Fell, in Lancashire. Marked as seen by Wilson himself, and repeated **1763.** Martyn, Pl. Cantab, 60. **1778.** Robson, Flora, 142. **1796.** Withering, ed. iii., 335. By Jackson; and in all subsequent editions of Withering. **1805.** Turner and Dillwyn, Bot. Guide, ii., 367. **1835.** Watson, New Bot. Guide, on authority of 'B.G.' **1843.** Jopling, Furness and Cartmel, 272. Jackson repeated; and near Dalton, Aiton. **1846.** Phytologist, 429. At Dalton-in-Furness, C. Wright. It will be noticed that Borrer did not see the plant. He only quotes Wright, who again is probably only quoting Aiton. **1861** (dated **1855**). Martineau's Guide, 187. J. Wilson repeated; and in **1864.** Linton, Lake Country, 330. **1874.** J. of B., Miss E. Hodgson. Nearly gone from old station on Cartmel Fell, but

abundant higher up in a bog. **1885.** Baker's Flora, 201. J. Wilson, Aiton, and Miss Hodgson's statements repeated. **1889.** Westm. Notebook, 154. J. Wilson repeated in Martindale's Early Westm. Plant Records.

Allium ursinum L. C.F.R., 1551.

1843. Jopling, Furness and Cartmel, 272. Plentiful in Conishead Priory Woods, Aiton. **1864.** Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. No locality.

Scilla nutans Sm. C.F.R., 1548.

= *S. festalis* Salis., the earlier name.

1864. Linton, Lake Country, 330, as *Hyacinthus* L. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. No locality. White and rose varieties, Beckside Wood, near Ulverston, Mrs. Hart Jackson; and repeated **1885.** Baker's Flora, 202.

Ornithogalum umbellatum L.

1874. J. of B., Miss E. Hodgson. Orchards in Furness; and repeated **1885.** Baker's Flora, 202.

Gagea fasciculata Salisb. C.F.R., 1570.

1869. Aspland's Guide, as *G. lutea* Ker. Within six miles of Grange, A. Mason. **1885.** Baker's Flora, 202. Grange-over-Sands, Rev. H. Higgins. (Gough's locality in Baker is not in North Lancashire.)

Colchicum autumnale L. C.F.R., 1551.

1805. Turner and Dillwyn, ii., 368. A little below Newby Bridge, on the left hand side of the road to Ulverston, J. Woods, junr.; and repeated **1818.** Withering, ed. vi., 481, and ed. vii., **1830,** 461. **1834.** Baxter, Phænog. Bot., i., 10. **1835.** Watson, New Bot. Guide, i., 303. **1885.** Baker's Flora, 204.

Narthecium ossifragum Huds. C.F.R., 1570.

1837. Baxter, Phænog. Bot., iii., 186. Near Coniston, Miss Mary Beever. **1864.** Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Boggy spots on the hills, frequent.

Paris quadrifolia L. C.F.R., 1548.

1805. West, Antiq., ed. Close, 379. In Urswick Woods, Atkinson; and repeated **1842.** Evans, Furness and Furness Abbey, 26. **1843.** Jopling, Furness and Cartmel, 272. Atkinson repeated; Woods at Bardsea, Aiton; Roudsey Wood, W. Wilson. **1860.** Phytologist, 257. Humphrey

Head, Dr. Windsor; and repeated in **1861,** 259. **1869.** Aspland's Guide. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Frequent in woods.

Juncus bufonius L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Frequent, no locality.

VAR. ***fasciculatus*** Koch.

1885. Baker's Flora, 213. In the Saltmarsh at Flookborough, J. G. Baker. Note, i.e., Sandgate Marsh.

Juncus squarrosus L. C.F.R., 1640.

1874. J. of B., Miss E. Hodgson. Frequent, no locality.

Juncus Gerardi Lois. C.F.R., 1818.

1885. Baker's Flora, 213. Walney Island, Cark, Flookborough, Grange, J. G. Baker.

Juncus filiformis L. C.F.R., 1688.

1796. Withering, ed. iii., 346. At Windermoor, in Cartmel, Jackson; and repeated in all following editions. **1800.** Smith, Fl. Brit., i., 377. **1805.** Turner and Dillwyn, Bot. Guide, ii., 367. The locality misprinted as Winandermere, in Cartmel. **1828.** Smith, Eng. Fl., ed. 2, ii., 162-3. Correctly quoted. **1835.** Watson, New Bot. Guide, i., 303. Exactly copies T. and D., and gives as authority 'Eng. Fl.' **1850.** Hooker and Arnott, Brit. Fl., 448. Stony margins of lakes in Cumberland, Westmorland, and Lancashire. **1885.** Baker's Flora, 211. Head of Coniston Water, J. G. Baker.

Juncus glaucus Ehrh. C.F.R., 1597.

Some of the old records have *Juncus acutus* L. from this area. As the locality is hardly on the coast line, I have put the records under the present species; but if any reader prefers to consider it wrong and thinks that *J. maritimus* Lam. would better fit the occasion, he is of course at perfect liberty to do so. I know that the shore line now is very different to that of 1800, for much land had been reclaimed before the railway embankment was built, but *J. glaucus* seems to me the more likely species.

1800. Smith, Fl. Brit., 374, as *acutus.* At Holker, Lancashire, Woodward; and repeated **1812.** Withering, ed. v., 431. **1818.** Ed. vi., 462. **1828.** Smith, Eng. Fl., ed. ii., vol. ii., 139. **1830.** Withering, ed. vii., 437-38. **1835.** Watson, New Bot. Guide, i., 303. 'Holker, Lancashire (Eng. Flora).' **1864.** Linton, Lake Country, 330. Common, no locality. **1874.** J. of B., Miss E. Hodgson. Frequent, no locality.

Juncus diffusus Hoppe. C.F.R., 1843.

1885. Baker's Flora, 211. Humphrey Head, at the bottom of the wood on the east side of ridge, J. G. Baker.

Juncus effusus L. C.F.R., 1570.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Frequent, no locality. **1885.** Baker's Flora, 211. Up to 600 yards on Coniston Old Man, J. G. Baker.

Juncus conglomeratus L. C.F.R., 1634.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Frequent, no locality.

Juncus maritimus Lam. C.F.R., 1640.

[Withering in several, if not all, editions has 'Coasts of Lancashire.'] **1874.** J. of B., Miss E. Hodgson. Saltmarsh, below Humphrey Head; and repeated **1885.** Baker's Flora, 212. Plentiful at Cark and Flookborough, J. G. Baker. Saltmarsh at Ulverston, Rev. A. Ley. This, as before, is Plumpton Marsh.

[***Juncus acutus.***—See *J. glaucus.*]

Juncus supinus Mœnch. C.F.R., 1724.

1861. Phytologist, 260. Shore below Humphrey Head, west side, Dr. Windsor. **1874.** J. of B., Miss. E. Hodgson. Frequent, no locality. **1885.** Baker's Flora, 212. On Coniston Old Man, J. G. Baker.

Juncus obtusiflorus Ehrh. C.F.R., 1724.

1874. J. of B. Miss E. Hodgson. Greenodd shore; and repeated **1885.** Baker's Flora, 212. Specimen seen by Mr. Baker.

Juncus lamprocarpus Ehrh. C.F.R., 1660.

1874. J. of B., Miss E. Hodgson. Frequent, no locality.

VAR. ***nigritellus*** Don.

1869. J. of B., 144. In a notice of Rep. Bot. Ex. Club, 'Shores of Coniston Lake, A. G. More,' Dr. Boswell in the notice says, 'These specimens seem to me ordinary *J. lamprocarpus.*' **1885.** Baker's Flora, 212. 'A variety approaching *nigritellus* found at Coniston by Mr. A. G. More.'

Juncus acutiflorus Ehrh. = ***J. sylvaticus*** Reich. C.F.R., 1632.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Frequent, no locality.

Luzula pilosa Willd. C.F.R., 1597.

1864. Linton, Lake Country, 330. 'Common,' no locality.

Luzula maxima DC. C.F.R., 1670.

1864. Linton, Lake Country, 330, as *sylvatica* Bich. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Colton Beck Wood; Old Hall Wood, near Ulverston.

Luzula campestris DC. C.F.R., 1597.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. No locality.

Luzula multiflora Lej. C.F.R., 1660.

1874. J. of B., Miss E. Hodgson. Grassy knolls and hills, frequent.

Typha latifolia L. C.F.R., 1548.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1869.** Bolton, Geol. Frag., 116, as 'bullrushes.' Urswick Tarn.

Typha angustifolia L. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson. Urswick Tarn; and repeated **1885.** Baker's Flora, 211. Blelham Tarn, W. H. Hills.

Sparganium ramosum Huds. C.F.R., 1562.

1861. Phytologist, 237. Ditches and roadsides between Humphrey Head and Cartmel, C. J. Ashfield. **1874.** J. of B., Miss E. Hodgson. Urswick Tarn; Drylands, Isle of Walney. **1885.** Baker's Flora, 210. Frequent in ponds and ditches in the low country, from Walney Island and Urswick Tarn.

Sparganium simplex Huds. C.F.R., 1597.

1861. Phytologist, 237. Ditches and roadsides between Humphrey Head and Cartmel, C. J. Ashfield. **1874.** J. of B., Miss E. Hodgson. In a spring by Humphrey Head. **1885.** Baker's Flora, 210. Ascending from shore level at Humphrey Head.

NOTE.—I cannot locate Mr. Ashfield's record nearer than the above, although it is, I know, rather vague.

Sparganium minimum Fr. C.F.R., 1666.

1885. Baker's Flora, 211. Coniston Lake, Miss S. Beever. Tarn by the side of the road between Coniston and Hawkshead, W. Southall. This is the Warton Tarn mentioned before.

Arum maculatum L. C.F.R., 1548.

1843. Jopling, Furness and Cartmel, 270. Frequent in woods and shady places. **1864.** Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Hedge-banks, frequent.

Lemna minor L. C.F.R., 1562.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. No locality.

Alisma Plantago L. C.F.R., 1597.

1843. Jopling, Furness and Cartmel, 271. Around Conishead Priory, Aiton; Ellerside Mosses, Cartmel, Wilson. **1874.** J. of B., Miss E. Hodgson. No locality.

Alisma ranunculoides L. C.F.R., 1633.

1796. Withering, ed. iii., 362. In the ditches, Goldmire, near Dalton, Atkinson; and repeated in all following editions of Withering; in ed. vii., **1830,** the Editor, Withering's son, says, 'Not infrequent in the district of the lakes.' **1805.** West, Antiq., ed. Close, 376. **1805.** Turner and Dillwyn, Bot. Guide, ii., 368. **1842.** Evans, Furness and Furness Abbey, 23. **1843.** Jopling, Furness and Cartmel, 271; repeated Atkinson, by Aiton; Roudsey Wood, W. Wilson. **1874.** J. of B., Miss E. Hodgson. Peat ditches at Plumpton. **1885.** Baker's Flora, 205. Atkinson, Wilson, and Miss Hodgson repeated. Drawn from Wray by Miss Wilson.

Elisma natans Buch. C.F.R., 1732.

1885. Baker's Flora, 205, as *Alisma natans* L. Coniston, Miss S. Beever. 'Confirmation wanted.'

[***Sagittaria sagittifolia*** L.

1843. Jopling, Furness and Cartmel, 271. Frequent in boggy ditches and pools, and repeated **1885.** Baker's Flora, 205. 'I have not met with it, and it is not in Miss Hodgson's list.' J. G. Baker. The late Rev. F. A. Malleson, of Broughton-in-Furness, who knew the plant, also sought for it in vain in North Lancashire.]

Triglochin palustre L. C.F.R., 1597.

1864. Linton, Lake Country, 330. 'Common,' no locality. **1874.** J. of B., Miss E. Hodgson. Pool Bridge (= at Rusland); frequent in wet meadows. **1885.** Baker's Flora, 206. Ascending from shore marshes at Flookborough to 400 yards on Coniston Old Man, J. G. Baker.

Triglochin maritimum L. C.F.R., 1597.

1861. Phytologist, 260. Shore below Humphrey Head, west side, Dr. Windsor. **1874.** J. of B., Miss Hodgson. Shore level, Plumpton and Greenodd; Dr. Windsor's locality repeated; Shore rocks at Grange. **1885.** Baker's Flora, 206. Saltmarshes, frequent . . . . Ulverston, Cark, and Flookborough.

Potamogeton lucens L. C.F.R., 1633.

1885. Baker's Flora, 207. Coniston Lake, Miss S. Beever.

Potamogeton natans L. C.F.R., 1597.

1864. Linton, Lake Country, 330. 'Common,' no locality.

Potamogeton polygonifolius Pourr. C.F.R., 1829.

1874. J. of B., Miss E. Hodgon. Very frequent, no locality.

[***Potamogeton fluitans.***

1874. J. of B., Miss E. Hodgson. Kirkby Moor. No authority given for name -possibly (but I have nothing but the name to work upon), *P. rufescens* Schrad., which is a synonym, according to Sir Jos. Hooker, for *P. fluitans* Sm. (Stud. Fl., ed. iii., 1884, p. 431).]

Potamogeton heterophyllus (Schreb. ?). C.F.R., 1798.

1864. Linton, Lake Country, 330. Common, no locality. Linton gives no authority for name.

Potamogeton Zizii Roth. C.F.R., 1879.

1884. J. of B., 370. Coniston Lake, C. Bailey; and repeated **1885.** Baker's Flora, 208.

Potamogeton prælongus Wulf. C.F.R., 1835.

1846. Phytologist, 426. In Windermere, near the Ferry Inn, W. Borrer. **1885.** Baker's Flora, 208. Borrer repeated in the Westmorland records. At the north end of Coniston Lake, near Waterhead, J. G. Baker.

Potamogeton perfoliatum L. C.F.R., 1633.

1885. Baker's Flora, 207. Windermere; Coniston Water.

Potamogeton crispum L. C.F.R., 1632.

1874. J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 207. 'Included in Miss Hodgson's list.'

Eleocharis palustris R.Br. C.F.R., 1633.

1874. J. of B., Miss E. Hodgson, as *Scirpus palustris*. Bardsea Mill Pond; Urswick Tarn.

Eleocharis multicaulis Sm. C.F.R., 1800.

1885. Baker's Flora, 216. Isles of Windermere, W. Foggitt.

Scirpus pauciflorus Lightf. C.F.R., 1777.

1874. J. of B., Miss E. Hodgson. Plumpton Saltmarsh; and repeated **1885.** Baker's Flora, 217; and Shoremarsh at Flookborough, J. G. Baker.

Scirpus cæpitosus L. C.F.R., 1666.

1874. J. of B., Miss E. Hodgson. Near Birk's Bridge, and other places in Dunnerdale Fells.

Scirpus fluitans L. C.F.R., 1688.

1796. Withering, ed. iii., 74-5. In small rills . . . . about Newton-in-Cartmel, I. Hall; and repeated in all editions following. **1874.** J. of B., 370. Ellerhow, Lindale, Rev. W. M. Hind. **1885.** Baker's Flora, 217. Hall repeated.

LINCOLNSHIRE DIPTERA: A PRELIMINARY LIST.

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The following list of Diptera, collected by my friend the Rev. Alfred Thornley, M.A., of South Leverton, Notts., is published exactly on the same lines as my previous paper on the Nottinghamshire species in the present volume (pp. 89-103). The majority of Mr. Thornley's specimens in the present paper were taken in two small detached areas, one on the coast, and one at Torksey, a small village on the Lincolnshire side of the Trent, including the coast-line from Saltfleet southwards to Sutton-on-Sea. A few records are also given from Kirton Marsh, a salt marsh on the estuary of the Witham, a few miles south-east of Boston. In addition to these records, the following Lincolnshire Lists have been incorporated, in order to render the present paper as complete as possible. A short list for the Louth District, published by Mr. H. Wallis Kew in 1886, in 'The Naturalist' (see Nat., Sept. 1886, p. 276), the species having been identified by Mr. T. D. A. Cockerell. Also a second list by Mr. Kew, published in 1888 (see Nat., July 1888, pp. 217-218), the species having been identified by Mr. Brunetti (Alford specimens), and Mr. Verrall (Louth specimens). In the paper these lists will be cited as Kew, 1886, and Kew, 1888. In addition to these, two lists by Mr. Jas. Eardley Mason have been further incorporated. The first, for the Alford district, was published in 1890, the specimens having been identified by Mr. Verrall (see Nat., June 1890, pp. 165-166). This list was republished with additions and additional detail in 'The Naturalist' for June 1896 (pp. 175-180). The lists are quoted in the paper as Mason, 1890, and Mason, 1896. A few species, collected chiefly in the northern part of the county by Mr. Wm. Denison Roebuck, and sent to me, complete the Lincolnshire records.

It is hoped that the present contribution may serve as a preliminary list upon which to build at some future date a more or less complete Dipterous fauna of the county. A few critical notes have been added at the end of the list, and the species dealt with in these notes are marked with an asterisk in the list.

Most of the records are for North Lincolnshire, the few from South Lincolnshire being distinguished by the heading '**Linc. S.**'

Fam. CECIDOMYIDÆ.

Cecidomyia destructor Say. Alford, Bilsby, Rigsby-with-Ailby, Well, Willoughby, etc. (Mason, 1896).

Fam. MYCETOPHILIDÆ.

Acnemia nitidicollis Mg. Alford, one ♀, 3rd August 1888 (Mason, 1890).

Macrocera fasciata Mg. Well, one, 25th June 1888 (Mason, 1890).

Fam. BIBIONIDÆ.

Dilophus femoratus Mg. Bank of river Ancholme, Cadney, near Brigg, one ♀, 2nd June 1895 (Roebuck).

Bibio marci L. Lincoln, one ♀, May 1896 (Thornley). Near Louth, two, 1887 (Kew, 1888).

Bibio johannis L. Hallington (Kew, 1888).

Fam. CHIRONOMIDÆ.

Chironomus plumosus L. Torksey, one ♂, May 1896 (Thornley).

Ceratopogon bipunctatus L. Mumby Chapel, one ♀, 31st July 1888 (Mason, 1890). Mablethorpe, one ♀, 12th August 1888 (Mason, 1890).

Fam. CULICIDÆ.

Culex nemorosus Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Fam. PTYCHOPTERIDÆ.

Ptychoptera contaminata L. Rigsby, 3rd August 1887 (Mason, 1896). Theddlethorpe, two ♂s and one ♀, June 1896 (Thornley).

Ptychoptera albimana Fab. Well, one, 20th October 1888 (Mason, 1890).

Fam. LIMNOBIDÆ.

Limnobia flavipes Fab. Greenfield, two, 8th June 1887 (Mason, 1896).

Limnobia tripunctata Fab. Well, ♂ and ♀, 27th June 1888 (Mason, 1890).

Rhypholophus lineatus Mg. Alford district (Mason, 1896).

Trichocera regelationis L. Alford, 2nd December 1887 (Mason, 1896).

Fam. TIPULIDÆ.

Pachyrrhina histrio Fab. Alford, one, 8th August 1888 (Mason, 1890). Louth, 20th July 1886; recorded as *Tipula histrio* (Kew, 1886).

Pachyrrhina quadrifaria Mg. Alford, one, 8th August 1888 (Mason, 1890).

Tipula lunata L. Louth, July 1886 (Kew, 1886).

Tipula gigantea Schrk. Well, June 1887 (Mason, 1896).

Tipula lutescens Fab. Alford, one ♂, 23rd June, 1888 (Mason, 1890).

Tipula ochracea Mg. Banks of river Ancholme, Cadney Parish, near Brigg, 2nd June 1895, one example (Roebuck).

Fam. STRATIOMYIDÆ.

Nemotelus uliginosus L. Saltfleet, one ♂, June 1896 (Thornley).

Sargus cuprarius L. Claythorpe, 6th July 1887 (Mason, 1896). Mumby Chapel, two, July 1887 (Mason, 1896).

Chloromyia formosa Scop. Mablethorpe, three ♂s and three ♀s, June 1897 (Thornley). Mumby Chapel, July 1885, and 5th July 1888 (Mason, 1896). Chapel, sandhills, 5th July 1886 (Kew, 1888). Horncastle Road, Louth, 24th July 1886 (Kew, 1888).

Microchrysa polita L. Mablethorpe, one ♂ and three ♀s, June 1897 (Thornley). Alford, two; Well, one, June 1887 (Mason, 1896).

Actina tibialis Mg. Alford district, two (Mason, 1896).

Fam. TABANIDÆ.

Hæmatopota pluvialis L. Alford, one, July 1887 (Mason, 1896). Well, one, 3rd July 1887 (Mason, 1896). Near Louth, 6th July 1886 (Kew, 1886).

Chrysops cæcutiens L. Alford (Mason, 1896).

Chrysops relictus Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Fam. LEPTIDÆ.

Leptis scolopacea L. Burton Lane Plantation, Brigg, one ♂, 3rd June 1895 (Roebuck). Bank of river Ancholme, Cadney Parish, near Brigg, one ♂, 2nd June 1895 (Roebuck).

Leptis tringaria L. Well, one, 12th August 1888 (Mason, 1890). Alford district, one (Mason, 1896).

Chrysopilus aureus Mg. Near Louth, three (Kew, 1888).

Fam. ASILIDÆ.

Dioctria rufipes DeG. Mablethorpe, one ♂, June 1897 (Thornley).

Philonicus albiceps Mg. Mumby Chapel, one ♀, 31st July 1888 (Mason, 1890).

Eutolmus rufibarbis Mg. Mumby Chapel, 12th July 1886 (Mason, 1896).

Dysmachus trigonus Mg. Theddlethorpe, two ♀s, June 1896. Mablethorpe, ten ♂s and seven ♀s, June 1897 (Thornley). Mablethorpe, June 1887 (Mason, 1896). Mablethorpe, June 1886 (Kew, 1886, but recorded as *Asilus trigonus* Mg.).

Linc. S.: Ancaster, one ♀, June 1896.

Fam. THEREVIDÆ.

Thereva nobilitata Fab. Mablethorpe, one ♂ and four ♀s, June 1897 (Thornley).

Thereva fulva Mg. Theddlethorpe, one ♀, June 1896 (Thornley).

Thereva annulata Fab. Theddlethorpe, one ♀, June 1896 (Thornley). Mablethorpe, twenty-six ♂s and one ♀, June 1897 (Thornley). Mumby Chapel, 19th July 1886 (Mason, 1896). Mablethorpe, June 1886 (Kew, 1886).

Fam. EMPIDÆ.

Empis tessellata Fab. Well, one, 16th June 1888 (Mason, 1890). Burwell Wood, Louth, 1887 (Kew, 1888).

Empis livida L. Mablethorpe, seven ♂s and three ♀s, June 1897 (Thornley). Near Louth, 1886 and 1887 (see Kew, 1886 and 1888).

Empis borealis L. Well, 6th June 1885 (Mason, 1896).

Empis stercorea L. Well, one ♀, 25th June 1888 (Mason, 1890).

Empis lutea Mg. Hubbard's Valley, Louth, 16th July, 1886 (Kew 1886).

Empis trigramma Mg. Torksey, three ♀s, May 1896 (Thornley).

Tachypeza nubila Mg. Mumby Chapel, one ♀, 23rd July 1888 (Mason, 1890).

Tachista arrogans L. Mumby Chapel, one ♀, 23rd July 1888 (Mason, 1890).

Tachydromia flavipes Fab. Mablethorpe, one ♀, June 1897

Tachydromia bicolor Fab. Well, one ♂, 16th June 1888, and one ♀, 23rd August 1888 (Mason, 1890).

Fam. DOLICHOPODIDÆ.

Psilopus platypterus F. Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886).

Dolichopus plumipes Scop. Mablethorpe, three ♀s, June 1897 (Thornley).

Dolichopus griseipennis Stan. Mablethorpe, one ♂, June 1897 (Thornley).

Dolichopus trivialis Hal. Well, one ♂, 25th June 1888 (Mason, 1890). Mablethorpe, one ♂, June 1897 (Thornley).

Dolichopus brevipennis Mg. Mablethorpe, six ♂s, June 1897 (Thornley). Louth, 20th July 1886 (Kew, 1886).

Dolichopus æneus DeG. Theddlethorpe, one ♂, June 1896 (Thornley). Mablethorpe, twenty-two ♂s and sixteen ♀s, June 1897 (Thornley). Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886). Louth (Kew, 1888).

Argyra argyria Mg. Mumby Chapel, one ♂, 31st July 1888 (Mason, 1890). Mablethorpe, two ♂s, June 1897 (Thornley).

Fam. PIPUNCULIDÆ.

Pipunculus sylvaticus Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Fam. SYRPHIDÆ.

Chrysogaster metallina Fab. Theddlethorpe, one ♀, June 1896 (Thornley).

Chrysogaster hirtella Lw. (=***macquarti*** Lw. of British lists). Theddlethorpe, six ♂s and five ♀s, June 1896 (Thornley). Saltfleet, one ♂, June 1896 (Thornley).

Chilosia flavimana Mg. Well, 16th June 1888 (Mason, 1890). Theddlethorpe, one ♀, June 1896 (Thornley).

Chilosia pubera Zett. Haugham Wood, Louth, 1887 (Kew, 1888).

Chilosia æstracea L. Chapel, 26th July 1885 (Mason, 1896).

Leucozona lucorum L. Mumby Chapel, one, 31st July 1888 (Mason, 1890). Well, two, 10th and 16th June 1888 (Mason, 1890).

Melanostoma mellinum L. Mablethorpe, two ♀s, June 1897 (Thornley).

Platychirus manicatus Mg. Alford, one ♀, June 1888 (Mason, 1890). Theddlethorpe, one ♂ and one ♀, June 1896 (Thornley). Mablethorpe, one ♂ and four ♀s, June 1897 (Thornley).

Platychirus albimanus Fab. Mablethorpe, one ♀, June 1897 (Thornley).

Platychirus peltatus Mg. Theddlethorpe, one ♂, June 1896. Grimsby, one ♀, September 1896. Mablethorpe, one ♂, June 1897 (Thornley).

Platychirus scutatus Mg. Theddlethorpe, two ♀s, June 1896 (Thornley).

Platychirus fulviventris Mcq. Theddlethorpe, one ♂, June 1896. Mablethorpe, one ♂, June 1897 (Thornley).

Platychirus scambus Staeg. Theddlethorpe, four ♂s, June 1896. Mablethorpe, three ♀s, June 1897 (Thornley).

Platychirus clypeatus Mg. Mumby Chapel, August 1887 (Mason, 1896). Theddlethorpe, two ♀s, June 1896. Mablethorpe, three ♂s and seven ♀s, June 1897 (Thornley).

Platychirus angustatus Ztt. Mablethorpe, one ♀, June 1897 (Thornley).

Syrphus umbellatarum Fab. Torksey, several examples, 1896 (Thornley).

Syrphus balteatus DeG. Alford district, eleven (Mason, 1896).

Syrphus bifasciatus Fab. Well, two, 10th and 16th June 1888 (Mason, 1890).

Syrphus luniger Mg. Grimsby, one ♀, September 1896 (Thornley).

Syrphus corollæ Fab. No localities given for Linc. N.

Linc. S.: Kirton Marsh, Boston, 26th August 1897 (Thornley).

Syrphus nitidicollis Mg. Mablethorpe, one ♀, June 1897 (Thornley).

Syrphus ribesii L. Mumby Chapel, 25th July 1887. Alford, 27th June 1887. Well, 5th June 1887. Mablethorpe, one ♂, 18th August 1888 (Mason, 1896). Mablethorpe, one ♀, June 1897 (Thornley).

Catabomba pyrastri L. Grimsby, one ♂, September 1896 (Thornley).

Sphærophoria scripta L. No localities given for Linc. N.

Linc. S.: Kirton Marsh, near Boston, one ♂, 26th August 1897 (Thornley).

Baccha obscuripennis Mg. Rigsby, 13th September 1886 (Mason, 1896).

Rhingia rostrata L. Well, 5th June 1887 (Mason, 1896, sub nom. *R. campestris* Mg.). Theddlethorpe, ♂ and ♀, June 1896. Torksey, one ♂, May 1896. Mablethorpe, two ♂s, June 1897 (Thornley).

Volucella bombylans L. Well, one, 10th June 1888 (Mason, 1890). Mablethorpe, one ♀, June 1897 (Thornley). Near Louth (Kew, 1888). Near Louth, with var. *plumata* DeG., 6th July 1886 (Kew, 1886).

Volucella pellucens L. Claythorpe, 6th July 1887 (Mason, 1896). An example picked up drowned on the shore at Mablethorpe, June 1897 (Thornley). Near Louth, 6th July 1886 (Kew, 1886).

Eristalis sepulchralis L. Theddlethorpe, one ♂, June 1896 (Thornley).

Eristalis tenax L. Greenfield, three, 8th June 1887. Alford, September-December 1886. Alford district, one (Mason, 1896). Louth, 27th March 1887 (Kew, 1888).

Eristalis intricarius L. Mumby Chapel, both sexes, 31st July 1888 (Mason, 1890).

Eristalis arbustorum L. Rigsby, 13th September 1886 (Mason, 1896). Mumby Chapel, August 1887 (Mason, 1896). Torksey, one ♂, June 1896 (Thornley). Kenwick, Louth, 12th August 1886 (Kew, 1888).

Eristalis pertinax Scop. Grimsby, one ♂ and one ♀, September 1896. Theddlethorpe, one ♀, June 1896 (Thornley). Kenwick Lane, Louth (Kew, 1888).

Eristalis horticola DeG. Grimsby, one ♀, September 1896 (Thornley).

Helophilus hybridus Lw. Theddlethorpe, four, June 1896 (Thornley).

Helophilus pendulus L. Mumby Chapel, August 1887 (Mason, 1896). Theddlethorpe, three ♂s and two ♀s, June 1896. Torksey, four ♂s and three ♀s, June 1896. Grimsby, one ♂, September 1896. Mablethorpe, one ♀, June 1897 (Thornley).

Helophilus frutetorum Fab. Theddlethorpe, one, June 1896 (Thornley).

Tropidia milesiformis Fln. Theddlethorpe, one ♂ and one ♀, June 1896. Mablethorpe, six ♂s and two ♀s, June 1897 (Thornley).

Xylota segnis L. Greenfield, 8th June 1887 (Mason, 1896).

Syritta pipiens L. Alford, 1st September 1887. Well, two, 10th and 16th June 1888. Alford district, one (Mason, 1896). Theddlethorpe, one ♀, June 1896 (Thornley). Louth, 20th July 1886 (Kew, 1886).

Eumerus lunulatus Mg. No localities given for Linc. N.

Linc. S.: Kirton Marsh, Boston, one ♂ and one ♀, 26th August 1897 (Thornley).

Fam. TACHINIDÆ.

Nemoræa radicum Fab. Torksey, two ♂s, August 1897 (Thornley).

Olivieria rufomaculata DeG. Torksey, two ♂s, July 1896 (Thornley).

Trixa œstroidea Dsv. Theddlethorpe, one ♀, June 1896. Mablethorpe, one ♂ and one ♀, June 1897 (Thornley).

Meigenia floralis Mg. No localities given for Linc. N.

Linc. S.: Kirton Marsh, Boston, one ♂, 26th August 1897 (Thornley).

Masicera myoidæa Dsv. Torksey, one, July 1896 (Thornley).

Masicera juvenilis Rnd.? No localities given for Linc. N.

Linc. S.: Kirton Marsh, Boston, one, 26th August 1897 (Thornley).

Phyto melanocephala Mg. Mablethorpe, two ♂s and one ♀, June 1897 (Thornley).

Fam. DEXIDÆ.

Thelaira leucozona Pz. Mablethorpe, one, 18th August 1888 (Mason, 1890).

Fam. SARCOPHAGIDÆ.

Sarcophaga carnaria L. Alford, one, 28th August 1888 (Mason, 1890). Mablethorpe, eleven ♂s and two ♀s, June 1897 (Thornley).

Linc. S.: Kirton Marsh, Boston, one ♂, 26th August 1897 (Thornley).

Sarcophaga similis Meade. Mablethorpe, two ♀s, June 1897 (Thornley).

Sarcophaga atropos Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Sarcophaga melanura Mg. Theddlethorpe, one ♂, June 1896. Mablethorpe, eight ♂s and two ♀s, June 1897 (Thornley).

Sarcophaga agricola Mg. Mablethorpe, two ♂s, June 1897 (Thornley).

Linc. S.: Kirton Marsh, Boston, one ♂, 26th August 1897 (Thornley).

Sarcophaga nigriventris Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Sarcophaga hæmorrhoidalis Ztt. Mablethorpe one ♂, June 1897 (Thornley).

Sarcophaga hæmorrhoa Mg. Theddlethorpe, two ♂s, June 1896. Grimsby, one ♀, September 1896. Mablethorpe, three ♂s, June 1897 (Thornley).

Fam. MUSCIDÆ.

Lucilia cæsar L. Mablethorpe, one ♀, June 1897 (Thornley). Louth, 20th July 1886; recorded as *Musca cæsar* L. (Kew, 1886).

Lucilia sylvarum Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Calliphora grœnlandica Fln. One ♀ in a railway carriage near Gainsborough, September 1897 (Thornley).

Calliphora erythrocephala Mg. Mumby Chapel, one, 31st July 1888 (Mason, 1890).

Calliphora vomitoria L. Louth, 20th July 1886; recorded as *Musca vomitoria* L. (Kew, 1886).

Calliphora sepulchralis Mg. No localities given for Linc. N.

Linc. S.: Kirton Marsh, Boston, one ♂, 26th August 1897 (Thornley).

Pollenia rudis Fab. Rigsby, two, 3rd April 1887. Alford, 29th December 1886. Claythorpe, 6th July 1887. Well, one, 16th June 1888 (Mason, 1896). Hainton, five ♂s and four ♀s, on the windows of the inn, 15th March 1896 (Roebuck).

Linc. S.: Kirton Marsh, Boston, three ♀s, 26th August 1897 (Thornley).

Musca corvina Fab. Chapel, August 1887 (Mason, 1896).

Pyrellia lasiophthalma Meq. Alford district, two, 1887 (Mason, 1896, sub nom. *Dasyphora cyanella* Mg.).

Graphomyia maculata Scop. Grimsby, one ♀, September 1896 (Thornley).

Morellia hortorum Fln. Mumby Chapel, 26th May 1885 (Mason, 1896). Grimsby, one ♂, September 1896. Mablethorpe, two ♂s and three ♀s, June 1897 (Thornley).

Cyrtoneura stabulans Fln. Alford, 28th February 1887 (Mason, 1896).

Myiospila meditabunda Fab. Mablethorpe, six ♂s and one ♀, June 1897 (Thornley). Banks of river Ancholme, Cadney, near Brigg, one ♂, 2nd June 1895 (Roebuck).

Stomoxys calcitrans L. Alford, one ♀, June 1888 (Mason, 1890).

Dasyphora cyanella Mg. [See *Pyrellia lasiophthalma* Mcq.].

Fam. ANTHOMYIDÆ.

Hyetodesia incana Wdm. Theddlethorpe, two ♂s and three ♀s, June 1896. Mablethorpe, three ♂s and one ♀, June 1897 (Thornley). Banks of river Ancholme, Cadney, near Brigg, one ♂, 2nd June 1895 (Roebuck).

Hyetodesia lucorum Fln. Torksey, one ♂, July 1896 (Thornley).

Hyetodesia umbratica Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Hyetodesia perdita Mg. Mablethorpe, three ♂, June 1897 (Thornley).

Hyetodesia basalis Ztt. Alford district, two ♀s (Mason, 1896).

Hyetodesia flaveola Fln. Well, one, 25th June 1888 (Mason, 1890).

Mydæa impuncta Fln. Theddlethorpe, one ♀, June 1896. Mablethorpe, four ♂s and three ♀s, June 1897 (Thornley). Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886); recorded as *Anthomyia marshami* Stephens (but see Mr. Meade's note, E.M.M., vol. xxv., p. 211).

Spilogaster duplicata Mg. Mablethorpe, one ♂ and one ♀, June 1897 (Thornley).

Spilogaster communis Dsv. Well, June 1887 (Mason, 1896).

****Spilogaster protuberans*** Ztt. Theddlethorpe, seven ♂s and three ♀s, June 1896. Mablethorpe, nine ♂s and six ♀s, June 1897 (Thornley).

Spilogaster quadrum Fln. Hubbard's Valley, Louth, 16th July 1886; recorded as *Pegomyia quadrum* Fab. (Kew, 1886).

Hydrotæa irritans Fln. Torksey, one ♂, July 1896. Mablethorpe, nine ♂s and one ♀, June 1897 (Thornley).

Ophyra leucostoma Wdm. Mablethorpe, two ♂s and one ♀, June 1897 (Thornley).

Hylemyia strigosa Fab. Alford district, one (Mason, 1896).

Hylemyia coarctata Fln. Cumberworth, larvæ and pupæ, May 1889; imagos, July 1889 (Mason, 1896).

Anthomyia radicum L. Mumby Chapel, one ♂, 31st July 1888 (Mason, 1890).

Homalomyia canicularis L. Mablethorpe, one ♀, 26th August 1888 (Mason, 1890).

Homalomyia armata Mg. Mablethorpe, one ♂, June 1897 (Thornley).

Lispa tentaculata DeG. Mumby Chapel, one, 31st July 1888 (Mason, 1890).

****Lispa crassiuscula*** Lw. Theddlethorpe, one ♂, June 1896 (Thornley).

Caricea tigrina Fab. Mablethorpe, one ♀, June, 1897 (Thornley).

Machorchis intermedia Fln. Louth, 20th July 1886 (Kew, 1886); recorded as *Cœnosia intermedia.*

Fam. CORDYLURIDÆ.

Cordylura pudica Mg. Theddlethorpe, one ♂ and one ♀, June 1896 (Thornley).

Scatophaga lutaria F. Mablethorpe, one ♂, June 1897 (Thornley).

Scatophaga stercoraria L. Theddlethorpe, one ♂ and one ♀, June 1896. Mablethorpe, three ♂s, June 1897 (Thornley). Mumby Chapel, 26th July 1885 and 9th August 1886. Well, June 1887. Alford district, two ♂s and three ♀s (Mason, 1896). Banks of river Ancholme, Cadney, near Brigg, two ♂s and one ♀, 2nd June 1895 (Roebuck). Hubbard's Valley, Louth (Kew, 1886).

Fam. SCIOMYZIDÆ.

Actora æstuum Mg. Theddlethorpe, twelve ♂s and two ♀s, June 1896 (Thornley). Mablethorpe, 'common on the beach,' June 1886 (Kew, 1886).

Sciomyza albocostata Fln. Well, one, 16th June 1888 (Mason, 1890).

Sciomyza cinerella Fln. Mablethorpe, two ♂s and five ♀s, June 1897 (Thornley).

Tetanocera sylvatica Mg. Theddlethorpe, two ♂s and three ♀s, June 1896 (Thornley).

Tetanocera reticulata L. No localities given for Linc. N.

Linc. S.: Kirton Marsh, Boston, one ♂ and one ♀, 26th August 1897 (Thornley).

Tetanocera punctulata Scop. Well, one, 25th June 1888 (Mason, 1890).

Linc. S.: Ancaster district, one ♀, June 1896 (Thornley).

Tetanocera elata F. Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886).

Tetanocera ferruginea Fall. Louth, 20th July 1886 (Kew, 1886).

Limnia marginata Fab. Sutton-le-Marsh, three, 5th August 1885. Mumby Chapel, one, August 1887 (Mason, 1896). Mablethorpe, one ♀, June 1897 (Thornley).

Limnia unguicornis Scop. Mablethorpe, two ♀s, June 1897 (Thornley).

Elgiva cucularia L. Near Louth, 20th July 1886 (Kew, 1886, but entered as *Tetanocera cucullaria*).

Fam. PSILIDÆ.

Psila atra Mg. Mablethorpe, three ♂s and two ♀s, June 1897 (Thornley).

****Psila gracilis*** Mg. Mablethorpe, one ♀, June 1897 (Thornley).

Fam. MICROPEZIDÆ.

Micropeza corrigiolata L. Well, 6th June 1885 (Mason, 1896).

Fam. ORTALIDÆ.

Tetanops myopina Fln. Theddlethorpe, one ♂ and one ♀, June 1896 (Thornley).

Ptilonota centralis Fab. Well, one, 16th June 1888 (Mason, 1890).

Ceroxys omissus Mg. Mablethorpe, two ♂s and one ♀, June 1897 (Thornley).

Platystoma seminationis Fab. Well, 27th June 1886 and 16th June 1888 (Mason, 1896).

Seoptera vibrans L. Alford, one, 5th July 1888 (Mason, 1890).

Fam. TRYPETIDÆ.

Acidia heraclei L. Saleby-with-Thoresthorpe, one, 4th June 1888 (Mason, 1890). Torksey, one ♀, May 1896 (Thornley).

Spilographa zoë Mg. Well, one ♂, 10th June 1888. Alford, one ♀, 10th June 1888 (Mason, 1890).

Trypeta falcata Scop. Mablethorpe, one ♂ and one ♀, June 1897 (Thornley).

Trypeta cornuta Fab. Alford district, one (Mason, 1896).

Tephritis miliaria Schrk. Mablethorpe, one ♀, June 1897 (Thornley).

Fam. LONCHÆIDÆ.

Palloptera umbellatarum Fab. Mablethorpe, one, June 1897 (Thornley).

Palloptera trimacula Mg. Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886).

Palloptera arcuata Fln. Well, June 1887 (Mason, 1896). Mablethorpe, one ♀, June 1897 (Thornley).

Fam. SAPROMYZIDÆ.

Sapromyza lupulina Fab. Mablethorpe, nineteen specimens, June 1897 (Thornley).

Sapromyza praeusta Mg. Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886).

Sapromyza rorida Fln. Alford district, two (Mason, 1896).

Lauxania ænea Fln. Mablethorpe, seven specimens, June 1897 (Thornley). Alford district, two (Mason, 1896).

Fam. OPOMYZIDÆ.

Balioptera tripunctata Fln. Mablethorpe, one ♂, June 1897 (Thornley).

Balioptera venusta Mg. Mablethorpe, two ♂s, June 1897 (Thornley).

Opomyza germinationis L. Claythorpe, 6th July 1887 (Mason, 1896). Mablethorpe, one ♂ and three ♀s, June 1897 (Thornley).

Fam. SEPSIDÆ.

Sepsis punctum F. Hubbard's Valley, Louth, 16th July 1886 (Kew, 1886).

Sepsis cynipsea L. Well, 22nd September 1886. Claythorpe, 6th July 1887. Alford district, two (Mason, 1896). Mablethorpe, one ♂, June 1897 (Thornley).

Sepsis nigripes Mg. Ailby, one ♀, 17th October 1888 (Mason, 1890).

Cheligaster putris L. Well, June 1887, recorded as *Themira putris* (Kew, 1888; Mason, 1896).

Fam. CHLOROPIDÆ.

Meromyza pratorum Mg. Mablethorpe, two ♂s, June 1897 (Thornley).

Chlorops tæniopus Mg. Alford, Well, Willoughby-with-Sloothby, larvæ, pupæ and imagos bred, June-July 1889 (Mason, 1896).

Fam. BORBORIDÆ.

Borborus geniculatus Mcq. No localities given for Linc. N. **Linc. S.:** Kirton Marsh, Boston, 26th August 1897 (Thornley).

Borborus equinus Fen. Near Louth (Kew, 1888).

Fam. PHORIDÆ.

Phora rufipes Mg. Alford, January 1887 (Mason, 1896).

Fam. HIPPOBOSCIDÆ.

Hippobosca equina L. Well, 8th September 1886 (Kew, 1888).

Melophagus ovinus L. Great Cotes (John Cordeaux, Ent., June 1871, p. 307).

NOTES.

Spilogaster protuberans Ztt. A fine series of a rare and very distinct species. Identified by Mr. R. H. Meade.

Lispa crassiuscula Lw. Only recorded as British by Mr. G. H. Verrall in 1894 (Ent. Mo. Mag., 1894, p. 143).

Psila gracilis Mg. This interesting species has not hitherto, so far as I am aware, been recorded as British.

NOTE—DIPTERA.

Additions to the List of Nottinghamshire Diptera.—I am able to make two important additions to the splendid list of Nottinghamshire Diptera published in the March and April numbers of 'The Naturalist.' These are *Bombylius major* and *Asilus crabroniformis*. Of the former I took seven specimens last month in a wood at Winkburn, Nottinghamshire, and I possess specimens of the latter species taken at Bulwell Forest, Nottingham, some years ago.—J. W. Carr, Nottingham, 2nd May 1898.

BOOK NOTICES.

We are indebted to our friend, Mr. A. H. Pawson, F.L.S., for a reprint of an interesting little paper of his on 'Ice Reservoirs,' based on Swiss observations, an excerpt from the 'Glacialist's Magazine' for December 1896.

From the Botanical Society of America we have received a reprint of a paper on **'The Phylogeny and Taxonomy of Angiosperms,'** by Prof. Charles E. Bessey, Ph.D., of Nebraska University, being his presidential address delivered in August 1897, at Toronto.

ALEXANDER GOODMAN MORE.

Life and Letters | **of** | **Alexander Goodman More** | **F.R.S.E.,** F.L.S., M.R.I.A. | with | Selections from his Zoological and | Botanica Writings | Edited by | **C. B. Moffat, B.A.** | with a Preface by | **Frances M. More** | | Dublin | Hodges, Figgis, & Co. (Ltd.), 104, Grafton Street | 1898 [8vo. cloth, pp. xii + 642 + frontispiece portrait and map].

As is not often the case, the value of this book is quite in proportion to its bulk, although by reason of the slenderness of its author's connection with Northern England (his mother was a Goodman, whose forbears made their mark on the history of Leeds), we cannot afford the space it deserves for examination of its very varied contents: the details of an interesting life passed in the pursuit of science data, with a selection from Mr. More's many papers on Bird and Plant Distribution, Isle of Wight Natural History, etc. Ever a lover of truth, with a peculiar 'flair' for the scenting of the significant points in natural economics so often overlooked by more painstaking observers; there was, it follows, nothing of 'bisquain' about the material More turned out from his taxidermal or herbarial laboratories. More, too, had a happy faculty for entering 'con amore' into the difficulties of another in almost any one of many 'lines.' As with Kingsley, to be helping 'the young idea to shoot' straight was a passion with him, being a born systematist. The writer knew him by correspondence only, but that is the general impression Mr. Moffat's biography conveys. As to the importance and value of More's work there can be no question, but it is probably to his fondness for instruction and happy ways of methodising, that his memory will so long remain enshrined in the hearts of those whose young enthusiasms he fanned into flame rather than—as so many dominies do—extinguished with the douche of caution: 'Wait a bit—don't set down your observations until we know more.' As we are told at pp. 195, 361, with a philosophic 'blarney,' a cryptic flattery the wiser for being hidden, he would say to a young disciple, 'Now, I think you have material for a nice paper—why not do it at once? Oh! don't hesitate! Here are pens and paper! We can revise it afterwards,' recognising that, to Make a Beginning, to Jot Down what you have seen before the impression fades, Place, Time, Date, is, with a truth-seeking naturalist likely to have his mind fuller every day he goes further into his study, *the* 'tip' to success, if intelligence and capacity are present at all. The book is bulky, but is as interesting reading as one of Darwin's journals, or Smiles' 'Life

of Edwards the Naturalist,' and we can give it no higher praise. It is a worthy monument to a worthy man, one who was, perhaps, wiser than he knew. It will prove particularly useful to working field-naturalists, whether the distribution of Butterflies, Birds, or Wild Flowers happens to be their particular penchant; turning over its pages all such will refresh their memories as at a conversazione; clarify their ideas on many subjects—for, born instructor and a little bit of a poet as well, as More was, he loved to recapitulate, or begin a matter with a sketch of what was already known; and, not least of joys, readers will, sure as fate, fight some of their battles over again, even where its pages are epistolary and controversial, in the company of honoured savants, Darwin, Hewett Watson, Babington, dead and gone, but who, like More, he in his way no less than they, have left behind them a shining wake on the wide waters of Time past.

F. Arnold Lees.

BOOK NOTICES.

Last year we received for notice a copy of the '**Moss Exchange Club Catalogue | of | British Hepaticæ.** | Compiled by | **Rev. C. H. Waddell, B.D.** | — | Price 6d. Post Free, 7d. | — | London: | W. Wesley & Son, 28, Essex Street, Strand. | May also be obtained from the Hon. Secretary to the Moss Exchange Club, | the Rev. C. H. Waddell, Saintfield, Co. Down. | — | 1897. | [Imprint]. The number of British plants of this group now amounts to 220 species, arranged in 59 genera, which is possibly a greater number than that of the British students of the group!

A copy has been sent to us of Nos. 1 and 2 of **The | Home University | a Magazine and Note-book of | All-round Knowledge and Aids to Memory** | [. . Quotation . . Contents]. The Educational Museum, Haslemere. | West, Newman & Co. | 54, Hatton Garden, London. | Jan. 15th and Feb. 15th, 1898. Price 1/-. 8vo., 48 pages, with 4 plates and a tabular view of amended chronology. Interleaved with ruled writing paper. All the articles unsigned. It contains, amongst the most varied matter, 'The Educational Museum'; 'Teeth.' There is nothing on the formation of a small private museum which has not been earlier and much better said by Mrs. Brightwen, who probably knows more about it than the writer of the article. A couple of pages are taken up with a conversation 'On Galls,' from which none, except the really ignorant, will gain anything. First numbers are, as a rule, poor evidence of the future of any magazine. Remembering that my own education really commenced after ordinary school-boy work was done, and that it was made harder for me by the denseness of quite average masters, who only saw idleness in what was, to me, work, I really should not like to face my youth again if this magazine is a sample of the direction in which the present day young idea is supposed to shoot. And worse still, in the 'Editorial Advice' is preached rank heresy, e.g., 'Learn to regard books as simply printed information, and rid your mind of all superstitious reverence for the copies which you possess. They were made for your use, and employ them accordingly.' Certainly use them as well as your experience will allow, but we don't all see the use of books from the schoolmaster's point of view, or even that of the educational publisher. The man who treats his books as he would a time-table, might possibly treat his friend's books in the same way, 'They are only printed information'!—S.L.P.

Naturalist.

CHARLES CARDALE BABINGTON.

Memorials Journal | and | Botanical Correspondence | of | Charles Cardale Babington | M.A. F.R.S. F.L.S. F.S.A. F.G.S. Fellow of St. John's College Cambridge and Professor of Botany | in the University | Cambridge | Macmillan and Bowes | 1897[.]

[8vo. cloth, pp. xcvi. + 476 + 2 portraits + folding pedigree in pocket; cash price, 10s. 6d. net.]

As we are told in the Preface, this book is divided into three distinct sections—Memorials (and Reminiscences), Journal, and Botanical Correspondence. The first section is interesting to all readers; the Journal mainly and the Correspondence only to botanists. Mrs. Babington is the general editor of the work.

The Memorials begin with a memoir written by his old friend, J. E. B. Mayor, Professor of Latin in the University, after which follow the Reminiscences. There are many 'in memoriam' notices, by the Rev. J. A. Babington, Mr. H. B. Francis, Prof. Mayor, Dr. H. C. G. Moule, etc.; these, with an obituary notice from 'The Christian,' tell us how strongly marked was the religious side of Babington's character. Some of the letters written at his death by sorrowing friends are of so tender and private a nature as to be surely quite out of place in a printed work of this kind.

Among the Memorials are reproduced the very complete obituary notice from the 'Journal of Botany,' Mr. Baker's from the Proceedings of the Royal Society, and the very interesting article sent by the Rev. W. Moyle Rogers to the former journal in July 1896. That is of importance, as it embodies the latest views Babington is known to have held on *Rubus*. The Chairman of the Cambrian Archæological Association writes of Babington's distinction as an archæologist, and particularly of his services to that body, which he joined in 1850. His views on the Sunday opening of the Botanic Garden (a project which he strenuously opposed) are set forth at length.

One naturally looks for mention of the interests of the late Professor in subjects other than those in which his name was so well known. It cannot be said that we learn much of any of them except his religious interests, and it seems to be the fact that (especially in later years) he was quite wrapped up in these. He was a strong Evangelical, and took the keenest interest in missionary enterprise. Prof. Mayor tells us that 'his drawing room supplied the fulcrum to move the world's pity. The London City Mission, Dr. Barnardo's Homes, Irish Church Missions, Church of England Zenana Mission, Bishop Cabrera,

Count Campello (Bishop-elect of the Italian Reform), the China Mission, can all tell of the breadth and warmth of his sympathy. When, some ten years back, the Cambridge Seven went out to China, they turned a deaf ear to all denial; he and no other must take the chair. The large room in the Guildhall was crowded to the doors, and 600 undergraduates sat on the platform.'

His literary tastes do not seem to have been extensive. When the Rev. J. A. Babington informs us that '. . . he devoured books of travel, biographies, histories, and fiction,' the editorial foot-note runs, 'this latter only of the highest kind'! He was most zealous for the welfare and prosperity of his own College (St. John's), and took the deepest interest in the extension of the educational course at the University.

In the Memorials is reprinted from the 'Cambridge Chronicle' of 25th January 1840 his letter on Irish Distress, which shows that the interest he took in the Irish people commenced very early; that the Irish Church Mission had his warm sympathy is evident from many of the entries in the Journal (pp. 217-9, etc.). He was, however, most tolerant, and in the Journal we read '(1834) Mar. 15. Signed a petition to do away with all religious tests at the time of taking degrees in anything but Divinity.'

We do not find that music, painting, etc., had any attractions for him. In his earlier years he evidently took a keen interest in politics, as the following entries show:—

'1835. Feb. 18. Attended a meeting at Prof. Sedgwick's, to consider what notice should be taken by the Liberal party of the University of the interference and improper influence that had been used by the Tory party at the late election for the town. It was determined to put out a declaration of our abhorrence of such conduct, and three men were appointed to draw one up before next Saturday.

'Mar. 5. First meeting of the Society for Protecting the Independence of the Town. A few members of the University . . . . were admitted honorary members, myself among the number.

'Mar. 16. Our declaration was published . . . . "in consequence of a very general impression that intimidation and persecution were employed by some members of the University at the late elections for this town." It protested against "every species of undue interference, directly or indirectly, with that trust" (i.e., the franchise) as "a gross breach of public and

private morality." It was signed by C. C. Babington, J. S. Henslow, G. B. Airy, Adam Sedgwick, and other well-known men.

'1837. Dec. 7. At a meeting of the Society for Protecting the Independence of the Town, I obtained a petition to be ordered from this town in favour of Irish Corporation Reform.'

The Journal is prefaced by a photograph of Babington at the age of 17, and opens with his own statement concerning his birth, parentage, and schooldays. He first reached Cambridge by coach on the evening of 10th October 1826. In 1827 we find the entries 'April 30. Went to Prof. Henslow's first lecture on botany. May 2. Conversed with him after the botanical lecture, and was asked to his house.' On that day his frame of mind was admirable, for he 'put an end to the Phrenological Society this evening.' The first entry of any particular plant is on 23rd June of the same year--*Ophrys apifera* on Culver Cliffs, Isle of Wight. The Journal contains much that is of interest to field-botanists; there are accounts of rambles in all parts of the British Isles, in the Channel Islands, and in Iceland. In many cases, however, they are merely topographical, and one cannot help thinking that a large number are included quite unnecessarily; for example, it is impossible to see what purpose has been served by the printing of at least half the entries on pp. 202-7, or of any of those on p. 99. Again, a protest must be recorded against the admission to the diary, unaccompanied by any note of caution, of some doubtful records. For instance, under 31st July 1835, we read 'To Beddgelert. Ascended Dinas Emrys, found on it *Eriophorum gracile* and *Carum verticillatum* in plenty.' It is certain that the former was not what we now mean by *E. gracile*, and it would have been well if the name had been queried as on p. 55. There are rather too many misprints among the botanical names, and the English ones are often italicized like the Latin. Very readable are the accounts of the late Professor's meetings with and rambles in company of Hooker, Borrer, Henslow, Newbould, Agardh, the Backhouses, Ball, Berkeley, James Sowerby, Graham, Balfour, Mackay, Greville, and others equally well known.

The Botanical Correspondence forms the really valuable part of the book, and is full of interest and information. The first letter (from St. John's College, Cambridge) is dated 24th November 1834, and addressed to [Sir] W. J. Hooker; the last (from Cotherstone, Teesdale) is dated 23rd July 1894, and addressed to I. H. Burkill, Esq. (of Caius College, who has

rendered great assistance in the production of this work). It would be useless to attempt to give any idea of the diversity of the plants mentioned in this correspondence, and all interested in British Botany may be recommended to read it for themselves.

W. WEST, junr.

NOTE—GEOLOGY.

A Grantham Boulder.—A short time ago an 'erratic' was thrown out during excavation for the foundation of houses on Green Hill, south-west of Grantham. The boulder was very much rounded, and measured 14 × 12 × 12 inches. There were no ice scratches on it, and the surface was pitted all over from the decomposition of the felspar

Upon submitting a hand specimen and micro-section to Mr. J. J. Harris Teall, F.R.S., he very kindly sends me the following descripiton:

'A massive rock, composed of numerous porphyritic crystals of plagioclase in a fine-grained dark matrix. Under the microscope the porphyritic crystals are seen to be labradorite or an allied felspar. They occur both as individuals and in groups, and not unfrequently show a zonal structure as well as twinning both on the pericline and albite plans. Inclusions occur, but are not abundant. The ground-mass is composed of lath-shaped felspars, grains of augite, and magnetite. There is also a little interstitial matter and a green substance which cannot be definitely identified. The rock is unlike any of the dykes in the North of England. It is a porphyritic Dolerite, and most nearly resembles certain rocks which occur in the Lake district, as, for example, at Eycott Hill. I cannot, of course, assert that it came from the Lake District.'

Any reader who may be interested in Lincolnshire boulders, may have a specimen of the above by applying to—HENRY PRESTON, Grantham, 6th May 1898.

NOTE—HYMENOPTERA.

***Osmia rufa* Nesting in a Lock.**—The eccentric habits of this pretty little bee are well known to students of the hymenoptera, and an interesting instance has lately come under my own notice. In the first week of November last a friend brought me the door-lock of an outbuilding on the Mapperley Road, Nottingham, which was filled with the clay cells and cocoons of this species, about 65 in all. The cocoons were removed from the lock and placed in a glass-topped box, which was kept in a warm room. On 15th March the bees began to emerge, five specimens—all males—appearing on that day; nine males emerged on the 16th, four on the 17th, eight on the 18th, four on the 19th, still all males; on the 20th two males and the first female appeared, on the 22nd one male and the second female, on the 23rd three males, on the 24th two males and one female, on the 26th one male, on the 27th two males, on the 28th one female, and the last two specimens, a male and a female appeared on 1st April.

In all, 43 males and 5 females emerged—a remarkable discrepancy in the sexes. Fifteen specimens failed to emerge, and on opening the cocoons a month later they were found to be all dead. Of these nine were males, five females, and one cocoon contained a dead larva. The nest thus contained about 52 males and only 10 females. There was no variation among the specimens, beyond slight difference in size, and the nest contained no parasites.

I am not aware if it is generally known that this bee completes its metamorphosis before the winter sets in, and passes the winter months in the perfect state; but it was certainly so in this case, as I opened one of the cocoons at the time the nest was brought me, and out crawled a perfectly-developed male specimen. A week or two later I opened another with the same result.—J. W. CARR, Nottingham, 2nd May 1898.

OLD LINCOLNSHIRE PLANT-RECORDS.

1724 AND 1726.

Rev. EDWARD ADRIAN WOODRUFFE-PEACOCK, L.Th., F.L.S., F.G.S.,

Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

I have received from Mr. J. Britten, F.L.S., of the British Museum, the following short catalogue of plants extracted from the Proceedings of a Botanical Society, which met at London at the dates given. In the proceedings of this Society Dillenius took part. We know that John Martyn, F.R.S. (1699-1768), founded his Bot. Soc. London, in 1721 26; and Vincent Bacon, F.R.S., surgeon and apothecary, of London and afterwards of Grantham, became a member of Martyn's Bot. Soc. in 1721.

The extracts are as follows. I have added the modern nomenclature in every case.

'Dec. 19th [1724].'

'The Secretary exhibited before the Society . . . several specimens of ***Atriplex maritima Bostoniensis*** [*A. pedunculata* L.], so called by Dr. Blair in his *Pharmaco-Botanologia*, Decad 3, p. 123. [They were] sent by the Dr. from Boston: being gathered by him in the place mentioned in the before-cited book.' [With us till quite recently, though not seen for a few years.]

'October 1, 1726.'

A Catalogue of Plants found near Grantham and communicated to the Society by Mr. Bacon.

Sideritis arvensis rubra Park. [*Stachys arvensis* L. Found in the neighbourhood still.]

Statice montana minor Inst. rei. Herb. [*Armeria maritima* Willd. There still.]

Reseda vulgaris C.B. [*R. lutea* L. There still.]

Centaurium luteum perfoliatum. In Belton Park. [*Blackstonia perfoliata* Huds. This species is common enough in the county, but has not been recorded for this neighbourhood since, as re-found.]

Vulneraria rustica J.B. In the meadows plentifully. [*Anthyllis vulneraria* L. Common enough all along the Lincolnshire limestone.]

Chamæcistus vulgaris flore luteo C.B. All along the road from Grantham to Great Paunton. [*Helianthemum chamæcistus* Mill. Common enough on the same stratum.]

Ferrum equinum Germanicum siliquis in summitate. On Spittlegate Heath. [*Hippocrepis comosa* L. The same as the last.]

Sanguisorba major et minor. Plentifully in all the meadows. [*Poterium officinale* Hook. fil., and *P. sanguisorba* L. Both there still.]

Filipendula J.B. On the Heath grounds plentifully. [*Spiræa filipendula* L. Common.]

Lamium cannabine folio amplo luteo labio purpureo Raii Syn. In a waste ground belonging to a house in High Street, Grantham. [*Galeopsis versicolor* Curt. This is one of our common peat fen species carried to Grantham accidentally. It has not been recorded for Div. 15 since.]

Ononis spinosa flore albo. By the roadside from Ropesby to Boothby. [It is there now, but which of the so-called species it is, I cannot say.]

Trifolium fragiferum Ger. emac. By the wayside from Grantham to Barrowby. [Common enough.]

Onobrychis seu Caput Gallinaceum Ger. emac. In a close on the right hand of the great road betwixt Grantham and Spittlegate. [*Onobrychis viciæfolia* Scop. An alien.]

Mentha cattaria J.B. Plentifully. [*Nepeta cataria* L. Common still.]

Marrubium album J.B. Plentifully. [*M. vulgare* L. Fairly common about now, but undoubtedly introduced.]

Caryophyllus Holosteus Alpinus latifolius C.B. On the bank-side on the left hand of the road going from the bowling green at Grantham to Manthorpe. [*Cerastium glomeratum* Thuill. I believe. I have seen it just north of Grantham myself; but it is only right to add that *C. arvense* L. grows on the spot named. This record has given us the oft-repeated record for *C. alpinum* L., which has given me infinite trouble. This last species has never been found in S. Lincs. 53.]

Campanula pratense flore conglomerato C.B. In all the meadows. [*Campanula glomerata* L. Common now.]

Acinos multis J.B. Plentifully in Swafield Dale, about seven miles south of Grantham. [*Calamintha arvensis* Lam. Common.]

Carum officinarum. Plentifully in the same place. [*Carum carui* L. An alien.]

This was the long lost list used by Edward Forster, F.L.S., F.R.S., in writing his Lincolnshire list in Gough's 'Camden's *Britannia*,' 1789.

NOTES AND NEWS.

The Nottingham Natural History Museum has recently acquired the very fine collection of British Birds' Eggs and Skins formed by Mr. F. B. Whitlock, whose ornithological writings are familiar to readers of 'The Naturalist.'—J.W.C.

We have before us reprints of papers published in America by two old friends and supporters of our journal.

One, by Mr. Joseph Burtt Davy, so well known for his Lincolnshire researches, details his 'Investigations on the Native Vegetation of Alkali Lands,' made in connection with the Agricultural Experiment Station of the University of California. The reprint is from the Report of the Station for the years 1895-7, and is illustrated by eight full-page half-tone plates of the various plants treated of.

The other paper, which is 'On the Disruptive Discharge in Air and Liquid Dielectrics, is a dissertation submitted to the Clark University by Mr. T. W. Edmondson, in fulfilment of requirements for the degree of Doctor of Philosophy. The reprint is from the February number of the 'Physical Review,' published in New York.

We regret to learn of the death of the well-known lepidopterist, Mr. J. N. Young, of Rotherham, who died at that place on the 13th of February. Mr. Young was a native of Lincolnshire and had during his lifetime done much useful work. We are glad to learn from 'The Entomologist' that his son inherits his tastes as well as his collections.

BOTANY OF SEDBERGH.

Catalogue of Plants | growing in the Sedbergh District, | including the | Lune Basin, from Middleton to Tebay. | By | **John Handley.** — | Leeds: | Richard Jackson, Commercial Street: | — | 1898. [8vo. pp. 48].

This unpretending Lune Florula, for a little flora it is, vividly recalls the saying about hiding one's light under a bushel. The author — a valued member of the Yorkshire Naturalists' Union — is too modest; he is quite-too-well-equipped by knowledge and conscientiousness to aver sitting at the feet of much less careful and trustworthy observers than himself! The brochure is mainly what it professes to be, a mere

list, but a full one, of the wild flowers of Dentdale, Garsdale, and Luneside, without exact habitats for fear of the rapacity of collectors—a wise practice, not, alas! the general custom—and for a local list bears internal evidence of discrimination and caution. We have few demurrers to make: one only, in fact, and two other statements to query. *Trientalis* grows both at Brimham and on Swill Hill, Halifax, as also about Grindleton Fell, near Clitheroe all three considerably to the south of Sedbergh. This coming spring it would be well to make sure if the *Potentilla* '*verna*' of the rail-bank near the Rawthey Bridge is really that species, and not the more likely *alpestris*; the Malham and Dunnow Cliff species belong to the latter; and also, I believe, the early Bakerian record for Waldendale in Wensley. The fine large *Agrimonia odorata* should occur; it likes rough bushy ground below scars on disintegrated limestone or silurian soils, occurring in both Weardale and Wensleydale under such conditions. In the north it is not often very odorific, and *two* nuts are not invariably found in the burr—only in the larger, earlier ones. I fear it is not a very 'good' species. There is a probable error in the statement that in Ravenstonedale a prickly shield fern (*Aspidium aculeatum*) grows which 'seems a cross between this and the Lonchitis'; how can that be when the Holly fern is not on record at all? Hybrids between ferns are almost unknown; and the variety is probably that named '*lonchitidioides*,' because it simulates Lonchitis in physiognomy. Perhaps the most interesting name in the list is that of *Gentiana campestris*, about which, however, no information is given. One observation is worth quotation for the insight it gives into the unconscious trickery growing out of pseudo-mimicry. Of *Genista tinctoria* (Dyer's Greenweed) we are felicitously told that 'Bees alight on the keel of the blossom looking for honey, but find none; they set the pistil free' (off!) and the pollen is shot out in a shower! True, and amazing to who observes it for the first time. *Draba muralis*, put on record for Garsdale in 1666 by Chr. Merritt, was confirmed by Dr. H. F. Parsons in 1879. Though the booklet is tiny, it is charming: one could discourse for long on the allusive texts its items suggest. The mysterious presence, or in the case of this tract absence, of Juniper, on the fells, wants clearing up: no shrub has a queerer distribution; it likes slate, it grows on limestone, yet is non est very often where it ought to be; and, again, is where it ought not, *if* soils are a factor in its phyteconomy.

F. Arnold Lees.

Naturalist.

THE CHEMISTRY OF THE LAKELAND TREES.

P. Q. KEEGAN, LL.D.,
Patterdale, Penrith, Cumberland.

'I do love a good tree,' ejaculates Allan Quatermain, and what true lover of nature will not heartily respond to the sentiment? Its life is intense, it lives and labours for itself and not for others. From a tiny seed it develops to the full in accordance with its specific exigencies, which re-echo again on the environmental influences, the soil, situation, season, atmosphere, etc., which sustain and modify for good or ill its vital energies. The sombre mysteries exhibited by wintry gloom and dormancy are veiled on the return of spring beneath broad curtains of a bright and lively green. The leaves, those delicate organisms that minister to its most indispensable of organic needs, are too tenderly framed for the bitter cold and capricious temperatures of our northern clime, so they fall and die in autumn days. Our suns are not generous enough as respects light and heat to always keep agoing the chemico-vital processes within, so that here again it is necessary to pause for a wintry rest, so as to bring to a full perfection what in tropic climes is effected day by day as the year rolls round. Fixed and rooted, steadfast and invincible to all aspects without, its inner arcanum is the theatre of chemical processes of the most important and interesting description. 'When next you behold the green tree,' says Liddon, 'be sure that you are in the presence of a very sacrament of nature, your eye rests upon the outward and visible sign of an inward and wholly invisible force.' Now, it is just this inward and wholly invisible force that we wish most especially to demonstrate; and as we cannot exhibit a living picture of its actual physiological activities, we must rest content, forsooth, with the next best thing, viz., a delineation of the most tangible and palpable manifestations of those activities, i.e., the chemical products thereof which on analysis we find to constitute the sum total of the arboreal organism.

Although it may be true to a certain extent that the Lake district is practically treeless, nevertheless many and varied scenes are known to me of illustrious beauty and attractiveness that owe these qualities to rich fleckings and interminglings of

verdure, natural wood, and naked rock, or to grand and lavish exuberance of sweeping woodlands; and who, forsooth, would gainsay the picturesque effect of forested and scattered larches, birches, and rowans cresting the steeply acclivitous ledge, or dominating the genius of the wild mountain waterfall? 'Rocky stations and mountain winds,' says Wordsworth, 'impart a peculiar character of picturesque intricacy in their stems and branches to trees.' It might, indeed, have been surmised that the Lake district would be the fitly-chosen theatre for such trees as are comparatively hardy, adaptable, and accommodating, yet at the same time love light and moisture, and an unrestricted scope for free development. Practically, and for the most part, so it is; but it does not follow, however it may have been in the good old times of the forests primeval, when 'the Oak and the Ash and the bonny Ivy tree, oh! they flourished at home in the north countrie,' that to-day the rapacity of man has left wild nature to altogether take care of itself. Hence, in consequence, we have not only native and denizen, but artificially planted trees as well, an example of which last we will now choose and proceed to describe its chemistry, viz., the

Larch. ***Larix europæa.*** This is essentially a mountain tree endowed with great root capacity, a strong demand for light, and an ability to throw out shoots which is rare among its congeners. The chemical analysis is very simple and by no means difficult. In the spring there is a gummy liquid between the inner and the outer bark, the sap contains mannite, and the cambium cell juice encloses a glucoside called coniferin, $C^{16}H^{22}O^{8}$, which was discovered by Hartig in 1863, and is distinguished by the very intense yellow colour which it yields with an aniline salt in the presence of acid, and by the deep blue reaction with phenol and HCl. The bark contains about 6 to 8 per cent. of a tannin which resembles in many ways that of the Rosaceæ, but does not contain nearly so much phloroglucin in its molecule. Like the members of this order, too, the Larch has a very considerable amount of free phloroglucin in its wood, bark, etc. There is a large quantity of sugar, mucilage, phlobaphene, resin, and oxalate of calcium. There are three special features anent this interesting denizen of the upland woodlands that demand considerate notice. There is first the eminently peculiar and vivid greenery of its April frondescence, which is undoubtedly due to the large quantity of a yellow glucoside (quercitrin or an ally) which the young tufted needles contain, and thereby heighten and vivify the yellow chlorophyllian

pigment (carotin). Secondly, the powerful chromogens which its metabolism produces take effect most æsthetically in the spring, 'when rosy plumelets tuft the larch.' Then again, the robust, incorruptible, extremely durable nature of its timber follows from what we have aforesaid, viz., the extensive and thorough saturation of its substance with efficient antiseptic tannic and phenolic bodies and their derivatives.

Wych Elm. ***Ulmus montana.*** This is a true native and special characteristic of the Lakeland Forest. The chemical analysis does not elicit any very notable feature, save and except the inconvenient abundance of mucilage in bark and leaves contained in the cavities of special mucilage-containing sacs. The bark contains a tannin which exhibits reactions and decomposition products, similar to that of the oak, etc.; it also contains a small quantity of resin, but I have searched in vain for any definite bitter principle, and there is only a mere trace of free phloroglucin in the tree. The leaves have much carotin, which continues into the autumn, imparting the brilliant yellow so conspicuously exhibited at that season; there is also a little tannin, and a soluble yellow colouring matter which is not rutin or quercetin; also sugar, quinic acid, much wax, but only a small quantity of starch, and probably mannite.

Birch. ***Betula alba.*** This, 'the queen of the woods,' is fitly represented in the district, and it contributes by its silvery bark, the lightness of its graceful outline, and the feathery evolution of its foliage to invest many a sylvan bank, steeply acclivitous ledge, pastoral hollow, or fell rising into mountain solitude with features of lasting beauty and picturesqueness. It is one of our few trees that 'bleed' copiously in the early months of the year, and the sap thus exuded is mainly a solution of sugar (levulose with some dextrose) with salts of potass and very small quantities of albumen, malic acid, etc. The bark contains about 34 per cent. of a white resin called betulin, $C^{36}H^{60}O^3$, also about 5½ per cent. tannin, which exists in little globules of solution encased in a film of albuminous matter, and is iron-blueing and yields on boiling with dilute HCl a red-brown phlobaphene and glucose, there is also a bitter principle, quinic acid, and some free phlobaphene, but no phloroglucin. Notwithstanding the prevailing clear colouring and the delicate flexibility of the leaves, they are extremely rich in chemical constituents; in the young state they contain about 4½ per cent. nitrogenous matters, later on there is much wax, carotin, 0·3 per cent. essential oil with two resin acids (secreted by the

dermal glands), a bitter yellow colouring matter (alnein); also very much mucilage containing tartrates, etc. On the whole it will be noticed that the chemical transformations of this highly artistic organism are not pushed much beyond the stage of the production of colourless waxes, resins, and balsamic oils, and hence the outcome and development of the tannins, phlobaphenes, pigments, etc., are considerably restricted, with the result that we have a silvery whitish bark, a non-durable timber, and autumn leaves painted golden yellow, and rarely crimson or scarlet.

Alder. ***Alnus glutinosa.*** Although this undoubtedly interesting species is morphologically and taxonomically closely related to the Birch, yet when chemically investigated we immediately discern serious differences in respect to physiology. In the Birch, as we have just seen, the deassimilation stops short apparently at the resin-forming stage, but in the Alder it goes much further ahead, and in fact evolves one of the most distinctive tannin-bearing tissues of our forests. The bark contains sometimes as much as 20 per cent. of tannin, which is of the same series as that of the Oak, but is more readily oxidisable, especially under the influence of alkalies, as is plainly palpable when the bark is cut and the tree felled. The wood is also surcharged with tannin, and hence its exceptional durability (Birch wood is otherwise), its tolerance of water, and its usefulness in the manufacture of boats, piles, clogs, etc. There is also another pigment (alnein) of a gold yellow tint deepened by alkalies, which also aids and abets in the production of the powerful colorific effect ensuing on the exposure of the fresh-cut tissues to the air. It is very noteworthy that the leaves of this species do not change colour in the autumn, i.e., until the stage of final dissolution sets in, the reason being, no doubt, that the tannin therein is considerable in quantity, and far too easily and readily forms high red-brown and muddy-shaded anhydrides, i.e., the lower anthocyan-forming stage is overleaped.

Willow. ***Salix*** sp. The most distinctive chemical feature of these shrubs is, as everybody knows, the presence of the remarkable glucoside salicin, $C^{13}H^{18}O^{7}$, which is now much employed in medicine as a tonic and febrifuge; and in this connection it has been noted as a bounteous dispensation of nature that those species, e.g., *S. pentandra* and *S. fragilis*, which furnish this drug most abundantly are also those which flourish more especially by stream sides, damp hollows, i.e., localities

eminently provocative of rheumatism, etc. Generally speaking, the crack Willows (*S. alba*, etc.) contain more tannin, up to 8 or 12 per cent., while the purple Willows (*S. helix*, *S. pentandra*, and *S. præcox*) contain more salicin, up to 4 per cent. The latter principle is easily prepared, and when oxidised it yields salicylol, which smells like the flowers of Meadow-Sweet (*Spiræa ulmaria*), and, in fact, the latter odour is due to the self-same or a nearly allied body. The tannin of the Willow is generally mixed with a little gallotannin, but in itself it is a glucoside somewhat like the tannin of the Oak bark, is iron blueing, and on potass-fusion yields protocatechuic acid and phloroglucin. The leaves have pretty much the same composition as the bark, with much starch, gum, phlobaphene, and oxalate of calcium.

Ash. ***Fraxinus excelsior.*** Our notice of this mystic tree must be regarded as of the utmost possible interest and importance. From every point of view the chemistry of this slim and airily-graceful native of our woodlands is worthy of special and prolonged study. In itself it is replete with most noteworthy features, which are doubly enhanced in instructiveness when placed in contrast with those of its fellow-tenants of the forest. Notwithstanding its eminent picturesque beauty, its transparency, and the engaging play of light through its entire leafage, it is palpably and plainly seen in the most marked degree to be almost absolutely bereft of brilliant and telling colorific effects. Its bark is hoarily green, and never reddish-brown or chocolate-red; its buds and flowers are black or dark purple; and the autumn leaves, when not yellow, are of a muddy-brown unpleasant shade. The special and most interesting constituent of the bark is a glucoside called fraxin, $C^{16}H^{18}O^{10}$ ½ aq., which possesses in a very marked degree the property of fluorescence, i.e., its aqueous solution is yellow when viewed by transmitted light, but by reflected light it appears lighted up by a strong and lustrous bluish-green colour. The tannin is totally different from that of any of our forest trees: it is distinctly iron-greening, does not precipitate gelatin, and on potass-fusion yields protocatechuic acid only. There is no phloroglucin or any of its derivatives in any of the tissues or organs. The leaves are richer in various chemical constituents than perhaps those of any other plant commonly known in our latitudes. They contain a fatty matter like olein, a resinous body, tannin, quinic and malic acids, an alcohol called inosite, also mannite, glucose, and gum; and about 6 to 9 per cent.

mineral matters (ash), the half of which is lime. The fruit contains 16 per cent. of a green oil having the odour of bugs, also an acrid resin, a bitter principle, tannin, and mucilage.

Wild Cherry. *Prunus avium.* We have now arrived at a most beautiful species of the wonderful order Rosaceæ. With us it is merely a denizen, but we have it on high authority that here it is more plentiful than in any other part of England, doubtless because both climate and soil here suit it to a tee. The chemical analysis, after all, is comparatively simple. It contains two substances, viz., phloroglucin, $C^6H^3(OH)^3$, and gum in especially large quantity. According to Waage, the former occurs in the free state in the bast, pith, cambium, the upper epidermis of the leaves, wood bundles, in short, nearly all parts of the tree contain very much of it. The gum exudes sometimes from the bark, and is then apparently poured forth as a pathological product or condition of the plant, but it is primarily formed in special conduits and in the vessels, and sometimes the contents of the latter, sometimes their walls participate in its formation; it seems to have the characters of soluble gum arabic and insoluble tragacanth combined, as on hydrolysis it yields arabinose and galactose. The bark contains fat, a white wax, about 4 per cent. tannin, which is iron-blueing and yields on potass-fusion protocatechuic acid, with about twice its weight of phloroglucin; there is also a small quantity of carotin and chlorophyll, much oxalate of calcium, a bitter principle which is not phloridzin or quercin, some mannite and glucose, a yellow and a red phlobaphene, but no resin. The young leaves contain a considerable quantity of rutin (do. also in the flowers), which later on gives place to tannin, which gradually increases, the red autumn leaves containing by far the largest amount; there is also very much mucilage, but the starch production seems decidedly feeble, owing to the choking influence exerted by the tannoid compounds on the formation and free activity of the chlorophyll. On the whole, it will be observed that in this highly interesting organism there is a lavish effluence of, on the one side, gum and glucose, and, on the other, of tannins and phlobaphenes.

Mountain Ash. *Sorbus aucuparia.* We need not rehearse the eminent beauties of this tree, which, as Wordsworth says, 'no eye can overlook.' Rather be it for us to scientifically explain how 'by a brook side or solitary tarn, she her station doth adorn.' Belonging to the same order as the last, the

chemical constituents are generally similar, but with some very decided differences. For instance, instead of, or perhaps in addition to, the inert and not very clearly defined bitter principle of the Wild Cherry, we have in nearly all parts of the Mountain Ash, a very powerful and distinctively marked nitrogenous glucoside called amygdalin, $C^{20}H^{27}NO^{11}$, which is easily resolved by the ferment emulsin into glucose, oil of bitter almonds, and prussic acid. Then again, in lieu of the inert and feeble fruits of the foregoing, we have in the Rowan Berry a veritable curiosity, an extraordinary phenomenon indeed in the chemistry of plants. With some exceptions, the whole battery, so to speak, of the vegetable chemical constituents seems to be represented here. Before becoming rose-red they contain tartaric acid; when still unripe they contain a large quantity of malic acid, a white wax, resin, a volatile resin-acid, (parasorbic acid), a substance that yields propylamine on decomposition, also amygdalin and emulsin, an amorphous tannin and phlobaphene, glucose, mannite, and another alcoholic sugar called sorbitol, $C^6H^{14}O^6$; the brilliant coral-red pigment of the epicarp is due to a mixture of carotin, anthocyan, and phlobaphene, but it is undoubtedly the carotin that is mainly effective in causing it to 'outshine spring's richest blossoms.'

Sycamore. ***Acer pseudo-platanus.*** This is perhaps more associated with home and humanity than any other tree in the district. 'It has long been the favourite of the cottagers,' says Wordsworth, 'and with the Fir has been chosen to screen their dwellings.' Science completely justifies the motion; for apart from the purely physical ambushment of its exceptionally strong 'spray,' the mystical entanglement of its boughs, and the remarkable denseness of its foliage, in point of fact, I know of no other leaf that is so richly charged with 'warm and comfortable' fatty oil. Want of space forbids me to say more than that the chemical constituents of this powerful organism approach very near to that of its congener the Horse-Chestnut, but in lieu of the magnificently fluorescent æsculin of the latter, there seems to exist in the bark of this species a resinous bitter principle (apparently a saponin), with very distinct reactions towards acids, bromine, etc. The tannins and resins seem to be nearly identical, but in neither case is there that saturation of the wood with these bodies and their decomposition products which would suffice to render it eminently durable and valuable as timber.

REPTILES AS PETS.

The Vivarium, | being a Practical Guide to | The Construction, Arrangement, | and Management of Vivaria, | containing | Full Information as to all Reptiles | suitable as Pets, how and where | to obtain them, and how to | Keep them in Health. | — | Illustrated. | By | the Rev. GREGORY C. BATEMAN, A.K.C., | Author of "The Fresh Water Aquarium," &c. — — | London: | L. Upcott Gill, 170, Strand, W.C. [Preface dated 28th July 1897; book received 17th August; Crown 8vo, cloth, 424 pages, besides title-sheet, advertisements and 27 plates; published price 7s. 6d.].

The title-page would have been better expressed had it read 'The Reptile Vivarium,' for the book is exclusively confined to reptiles, including amphibians, and the author, an enthusiast in his subject, has something to say about a surprisingly large number of these animals, ranging in size from alligators and large pythons down to the smallest of snakes, lizards and newts. There is no attempt at scientific or technical description, the author's treatment of his subject being mainly didactic and anecdotal, notes on their habits in captivity, vernacular names and popular superstitions, often the price at which they are acquirable, and methods by which our British forms can be captured. At p. 301 is figured a trap by which flies can be secured, and in another place some pieces of apparatus to be used for catching snakes by people who wish to run no risks to themselves. Some of the information given is new to us. We were not before aware that a snail was a crustacean, or that in the North of England the word 'adder' was applicable to *Tropidonotus natrix*. The author, however, speaks of Waterton having in one of his essays referred to the 'viper' and the 'adder' as two distinct species. The construction of vivaria is dealt with in the 2nd chapter, and the following one treats of plants suitable for stocking them, ferns being particularly advised for use. The book is quite an interesting one to read, well indexed, and attractively got up.

NOTE—BOTANY.

Vitality of Bulb of *Ornithogalum*.—On the 22nd of April 1893 I received from Mr. H. Carlton an entire specimen of *Ornithogalum nutans* L., growing wild as an escape at Conings by, Div. 10, as in a few other places in this county. I placed it in the drying press the same day, and kept it there under a four or eight-stone pressure till the end of June, changing the papers every third day. The specimen would not dry at all. Cutting off the bulb, I planted it in the garden to see if its wonderful vitality were still unexhausted; the leaves and flowers then dried perfectly in a fortnight. The bulb has thrown up narrow leaves every season since 1893. On the 16th of April this year I found it in flower for the first time; but my one bulb has multiplied, and there are now two, each with normal flower spikes and leaves. It has practically taken five years to recover its two months' drying in the press.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, Lincs., 20th April 1898.

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LAND AND FRESHWATER MOLLUSCA, 1892 and 1893.

The present instalment has been compiled and edited by

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,, 1890-91, ,, Jan.-Feb. 1897, pp. 27-40.

The Watsonian vice-counties are adopted throughout these bibliographies as more convenient and uniform in extent than the political counties; those comprised within the North of England are the following:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness and Cartmel; 70, Cumberland; and 71, Isle of Man; with their adjoining seas.

LIONEL E. ADAMS. YORK S.W.

Planorbis albus m. _scalariforme_ at Penistone [numerous in Scout Dam]. J. of C., Jan. 1892, p. 7.

LIONEL E. ADAMS. YORK S.W.

Helix rotundata var. _alba_ at Conisborough [eight taken July 1891]. J. of C., April 1892, p. 38.

LIONEL E. ADAMS. DERBYSHIRE.

A Contribution to the Authenticated Records of Derbyshire [giving distribution of 9 species and 6 varieties of *Arion* and *Limax*]. J. of C., July 1892, p. 77.

LIONEL E. ADAMS. YORK S.W.

Observations on the Mole [and its behaviour towards _Arion ater_ and *Agriolimax agrestis* in confinement; at Penistone, May 1892]. Zool., Dec. 1892, p. 422.

LIONEL E. ADAMS. YORK, S.W.

Donations to Collections [of Conch. Soc., 5th Oct. 1892; _Limnea_ *glabra* and *Sphærium lacustre* from Thurgoland]. J. of Conch., Jan. 1893, p. 129.

LIONEL E. ADAMS. YORK S.W.

The Mollusca of Penistone, South-West Yorkshire [_Arion ater_ and var. *brunnea*, *A. subfuscus*, *A. minimus*, *A. hortensis* and var. *grisea*, *A. circumscriptus*, *Limax maximus*, *L. arborum*, *Agriolimax agrestis* and

var. *nigra*, *A. lævis*, *Vitrina pellucida*, *Hyalinia cellaria* and var. *albina*, *H. glabra* and var. *viridans*, *H. alliaria* and var. *viridula*, *H. nitidula*, *H. radiatula* and var. *viridescenti-alba*, *H. pura* and var. *margaritacea*, *H. crystallina*, *H. fulva*, *Helix rotundata* and var. *alba*, *H. aculeata*, *H. nemoralis* (form *libellula* 12345 chiefly), *H. hortensis*, *H. hispida*, *Vertigo substriata*, *V. edentula*, *Clausilia rugosa*, *Cochlicopa lubrica* and var. *hyalina*, *Carychium minimum*, *Pisidium pusillum*, *Sphærium lacustre*, *Planorbis albus* and monst. *scalariforme*, *Limnæa peregra* and labiose monstrosities, also banded forms; *L. glabra*, *L. truncatula* and var. *major*, and *Ancylus fluviatilis* enumerated, with localities and details]. Nat., Oct. 1893, pp. 315-6.

T. H. Burrows. Notts.

Exhibits [to Conch. Soc., 4th Nov. 1892; Scalariform *Limnæa* *stagnalis*, Belford near Nottingham]. J. of Conch., Jan. 1893, p. 136.

J. Darker Butterell. York S.E.

***Amalia gagates* at Withernsea, Yorkshire [in Sep. 1891, along with** *Arion ater*, *Agriolimax agrestis*, and *Helix aspersa*, on the cliffs]. Nat., Aug. 1892, p. 253.

R. Cairns. Isle of Man.

Exhibits [to Conch. Soc., 12th Dec. 1891: *H. nemoralis*, *H. aspersa* and m. *sinistrorsum* from Isle of Man, last collected at Peel, August 1891]. J. of C., Jan. 1892, p. 11.

Robert Cairns. Isle of Man, Cheshire.

Exhibits [to Conch. Soc., 4th Nov. 1891; *Bulimus acutus* v. *inflata* from Peel, Isle of Man, and *Planorbis contortus* var. *alba* from Marple]. J. of C., April 1892, p. 45.

R. Cairns. Isle of Man.

Exhibits [to Conch. Soc., 4th Nov. 1892; *Helix itala* and *Bulimus* *acutus*, Peel, Isle of Man; and Manx examples of *Hyalinia draparnaldi* and *Helix aspersa* m. *sinistrorsum* and m. *scalariforme*]. J. of Conch., Jan. 1893, p. 137.

George W. Chaster. ? Notts, Derbyshire, or Linc. N.

***Vertigo pygmæa*, Drap., var. *albina* [found amongst rejectamenta** from the River Trent; *V. antivertigo* also found]. The Conchologist, 24th Dec. 1892, p. 96.

W. J. Clarke. York S.W.

***Viviparus contectus* still living at Askern [where it was found** commonly 15th June 1893; particulars given]. Nat., Oct. 1893, p. 304.

W. C. Clarkson. York Mid W.

Exhibits [to Conch. Soc., 11th Jan. 1893; *Bulimus obscurus* from How Stean, *Azeca* from How Stean and Greenhow Hill, and *Pisidium milium* from Darley]. J. of Conch., April 1893, p. 170.

T. D. A. Cockerell. Yorkshire.

Land and Freshwater Shells Peculiar to the British Isles [include the black var. of *Agriolimax agrestis* which is frequent in some places in Yorkshire, and never yet found on the Continent]. Nature, 26th May 1892, p. 77.

T. D. A. Cockerell. Lancs., York N.E., S.E., S.W.

The Endemic Features of the British Slug-Fauna [discussed, with illustrative references to *Limax maximus* var. *pallidodorsalis* at Wilton Wood, Redcar, *Agriolimax agrestis* mut. *nigra* at Beverley and Wakefield, mut. *griseus* Lancs., *Arion ater* var. *albolateralis* in the Isle of Man, var. *cinerea* in Durham and Northumberland, *A. circumscriptus* subsp. *bourguignati* mut. *atripunctatus* from Yorkshire]. Sci. Goss., Nov. 1892, pp. 255-9.

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ED. COLLIER. DERBYSHIRE.

Exhibits [to Manchester Branch of Conch. Soc., 13th Oct. 1892; *Helix nemoralis* from Mappleton, Dovedale]. J. of Conch., Jan. 1893, p. 132.

F. COLLIER. DERBYSHIRE.

Exhibits [to Manchester Branch; *Helix nemoralis* vars. *rubella* and *castanea* from Dovedale, Derbyshire]. J. of C., July 1892, p. 88.

FRANK COLLIER. DERBYSHIRE.

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F. W. FIERKE. YORK S.W.

[Mollusca observed by] the Yorkshire Naturalists' Union at Penistone and Dunford Bridge [on 9th July 1892; *Arion ater*, *A. circumscriptus*, *Limax agrestis*, *Vitrina*, *Hyalinia alliaria*, and *Helix rotundata*;

June 1898.

Limnæa peregra and vars. *labiosa* and *picta*, etc., scalariform *Planorbis albus*, *Pisidium pusillum* and *P. fontinale*, the water shells all at Scout Dam]. Nat., Aug. and Sept. 1892, pp. 256-257.

FREDERICK WILLIAM FIERKE. YORK S.E.

[Mollusca observed by] the Yorkshire Naturalists' Union at Withernsea [on 1st Aug. 1892; *Sphærium corneum*, *Pisidium pusillum*, *Valvata piscinalis*, *Limnæa peregra*, *L. stagnalis* found subfossil in lacustrine deposits; all except the last, found living, also *Sphærium lacustre*, *Pisidium fontinale*, *Bythinia tentaculata*, *Planorbis nautileus* and var. *crista*, *Pl. vortex*, *Pl. carinatus*, *Pl. complanatus*, *Physa fontinalis*, *Limnæa truncatula*, *Arion ater*, *A. minimus*, *Limax maximus*, *Agriolimax agrestis*, both *Succineæ*, *Vitrina*, *Hyalinia cellaria*, *H. alliaria*, *H. crystallina*, *Helix nemoralis*, *H. concinna*, *H. hispida*, *H. virgata*, *H. caperata* and var. *ornata*, *H. rotundata*, *H. pulchella*, *Pupa umbilicata*, *Vertigo pygmæa*, *Zua*, and *Carychium*, found alive; locality notes given]. Nat., Oct. 1892, pp. 294-6 and 299.

F. W. FIERKE. YORK N.E.

[Mollusca observed by] the Yorkshire Naturalists' Union at Coxwold and Byland [Sept. 1892; detailed notes of the collecting of *Arion ater*, *A. minimus*, *A. hortensis*, *A. circumscriptus*, *Limax maximus* var. *fasciata*, *L. cinereo-niger*, *L. arborum*, *Agriolimax agrestis* and vars. *sylvatica* and *lilacina*, *A. lævis*, *Vitrina*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. purus*, *Z. crystallinus*, *Z. fulvus*, *Z. excavatus*, *Helix rotundata*, *H. pygmæa*, *H. pulchella*, *H. lapicida*, *H. aspersa*, *H. hortensis*, *H. arbustorum*, *H. rufescens*, *H. hispida*, *H. granulata*, *Vertigo pygmæa*, *Clausilia perversa*, *Azeca*, *Zua*, *Succinea elegans*, *Carychium*, *Limnæa peregra*, *Sphærium lacustre*, and *Pisidium fontinale* and vars. *henslowana* and *cinerea*]. Nat., Nov. 1892, pp. 347-9.

FREDERICK W. FIERKE. YORK S.E.

Exhibits [to Conch. Soc., 1st March 1893; *Pisidium amnicum* from Driffield Canal]. J. of Conch., April 1893, p. 173.

F. W. FIERKE. YORK S.E.

Exhibits [to Conch. Soc., 3rd May 1893; *Helix hortensis* v. castanea 00300, Hull; *H. nemoralis*, varieties, Burstwick; *Vertigo edentula*, Speeton Cliffs, and *V. pygmæa* from Speeton Cliffs and Drewton Vale]. J. of Conch., July 1893, p. 206.

F. W. FIERKE. LINC. N.

Formation of a Lincolnshire Naturalists' Union [and Excursion to Mablethorpe, 12th June 1893: *Physa fontinalis*, both *Bythiniæ*, *Viviparus contectus*, *Valvata cristata*, *Limnæa stagnalis*, *L. peregra*, *Segmentina*, *Planorbis umbilicatus*, *Pl. vortex*, *Pl. contortus*, *Pl. corneus*, *Pl. carinatus*, *L. palustris*, *Sphærium corneum*, *Pisidium pusillum*, *Hyalinia fulva*, *Helix aspersa* var. *exalbida*, *H. caperata*, and *H. nemoralis*, with detailed notes]. Nat., Sept. 1893, pp. 258-260.

F. W. FIERKE. YORK S.W.

[Mollusca observed by] Yorkshire Naturalists at Askern [15th June 1893; *Arion ater* v. *brunnea*, *Hyalinia alliaria*, *H. nitidula*, *H. nitida*, *Helix rotundata*, *H. aspersa*, *H. nemoralis*, *H. cantiana*, *H. hispida*, *Cochlicopa lubrica*, *Succinea putris*, *Carychium*, *Planorbis fontanus*, *Pl. nautileus*, *Pl. vortex*, *Pl. carinatus*, *Pl. umbilicatus*, *Pl. corneus*, *Pl. contortus*, *Physa fontinalis*, *Limnæa peregra*, *L. stagnalis*, *L. palustris*, *Velletia*, *Bythinia* (both), *Valvata* (both), *Sphærium corneum*, *Pisidium fontinale*, and *P. pusillum* noted, with localities and details as to most of them]. Nat., Sept. 1893, pp. 284-286.

FRED. W. FIERKE. YORK S.W.

***Viviparus contectus* at Askern [where it still exists, though** reported extinct; details given]. Nat., Oct. 1893, p. 304.

F. W. Fierke. Linc. N.

[Mollusca observed by] Lincolnshire Naturalists at Woodhall Spa [7th Aug. 1893; *Velletia lacustris*, *Planorbis fontanus*, *Pl. carinatus*, *Valvata cristata*, *Limnæa peregra*, *Succinea putris*, *Arion minimus*, *Helix rotundata*, *H. hispida*, *Hyalinia cellaria*, *H. nitidula*, and *H. excavata*, with details]. Nat., Oct. 1893, p. 312.

J. H. F[ryer]. York S.E. and Mid W.

[Mollusca observed in the River when let off at York, by] York, Bootham, N.H. Club [included *Unio*, *Anodonta*, *Sphærium riviçola* and *Paludina vivipara*]. N.H.J., 15th Nov. 1892, p. 130.

W. A. Gain. Cheshire, Notts.

Notes on Varieties [including *Helix nemoralis* var. *hyalozonata* and *H. hispida* var. *alba* near Tuxford, and large examples of *Paludina contecta* from Mr. Milne of Bowden, Cheshire]. Brit. Nat., Feb. 1892, pp. 35-37.

W. A. Gain. Notts.

Conchology in Winter [presumably near Tuxford, Notts; *Vitrina*, *Helix aculeata*, *H. pygmæa*, *Clausilia rugosa*, *Zua*, *Arion minimus* (called here *intermedius*), *Carychium*, *Agriolimax agrestis*, *Zonites alliarius*, *Helix hispida*, *Balea*, and *Vertigo moulinsiana* mentioned]. Brit. Nat., March 1892, pp. 45-46.

W. A. Gain. York N.E.

Notes on Varieties [with a reference to W. C. Hey's observations on the effect of warmth of water on *Anodontæ* in the river Foss]. Brit. Nat., July 1892, p. 155.

W. A. Gain. ? Notts.

Some Remarks on the Colour Changes of *Arion intermedius*, Normand [as chronologically observed in examples doubtless found in Notts., though no locality is specified]. The Conch., 29th Sept. 1892, pp. 55-6.

W. A. Gain. York N.E.

Notes on Varieties [repeating W. C. Hey's observations on *U. tumidus* and on the *Anodontæ* near Clifton Slope, York]. Brit. Nat., Oct. 1892, pp. 213-4.

W. A. Gain. Notts.

Mollusca. Notes [on var. *pisidioides* of *Sphærium corneum* and its habitat at Clumber]. Brit. Nat., Dec. 1892, p. 255.

W. A. Gain. Notts.

The Mollusca of Nottinghamshire [enumerating with annotations, 4 species and 5 varieties of *Sphærium*, 3 and 5 of *Pisidium*, 2 and 5 of *Unio*, 2 and 4 of *Anodonta*, 1 of *Dreissena*, 1 of *Neritina*, 2 of *Viviparus*, 2 and 2 of *Bythinia*, 2 and 2 of *Valvata*]. Brit. Nat., Jan. 1893, pp. 3-5; March 1893, pp. 46-48. [One *Segmentina*, 10 species and 5 vars. of *Planorbis*, 1 *Bullinus*, 1 *Physa* (and 2 vars.), 1 *Amphipeplea*, 6 species and 15 vars. of *Limnæa*, 1 *Velletia*, and 1 *Ancylus* (with 2 vars.) listed]. Brit. Nat., July 1893, pp. 137-139. [Six species and 9 varieties of *Arion*, *Amalia gagates*, 3 and 6 of *Limax*, 2 and 5 of *Agriolimax*, and *Testacella scutulum*]. Brit. Nat., Nov. 1893, pp. 224-226. [*Vitrina*, 10 species and 4 vars. of *Hyalinia*, 3 and 1 of *Patula*, 15 and 30 of *Helix*, *Bulimus obscurus*, *Zua* and var., *Cæcilioides*, *Acme*, 4 and 2 of *Pupa*, 7 and 1 of *Vertigo*, *Balea*, 2 and 3 of *Clausilia*, 2 and 7 of *Succinea*, *Carychium*, *Acicula*, and varieties of *Unio*, *Anodon*, and *Arion* given as addenda]. Brit. Nat., Dec. 1893, pp. 233-240.

W. A. Gain. Notts.

The present Season Conchologically [in Notts. is far from satisfactory; note on *Anodonta cygnea*, *A. anatina*, *Unio pictorum*,

U. tumidus, both *Bythiniæ*, *Limnæa trincatula* and *L. peregra*, and their relative numbers at two different dates]. Brit. Nat., Sept. 1893, p. 189.

PERCY H. GRIMSHAW. YORK MID W.

Donations to Collections [of Conchol. Soc.; *Hyalinia alliaria* found on fern, Burley-in-Wharfedale]. J. of C., July 1892, p. 84.

G. K. GUDE. LINC. N.

Exhibits [to Conch. Soc., 4th Nov. 1891: *Limnæa stagnalis*, *Planorbis nautileus*, *Ancylus lacustris*, and *Pisidium obtusale* from pond at Rigsby (J. B. Davy); *Sphærium lacustre*, *Planorbis nitidus* and *Pisidium fontinale* from ponds at Tothby (J. B. Davy and E. Woodthorpe); and *Limnæa peregra* and *Sphærium corneum* from both localities]. J. of C., April 1892, p. 46.

J. RAY HARDY. LANCS., YORK S.W.

Exhibits [to Conch. Soc., 12th December 1891: Sinistral *Helix* *nemoralis* and *H. aspersa* from Lancashire, and sinistral *Limnæa stagnalis* from Doncaster]. J. of C., Jan. 1892, p. 12.

J. A. HARGREAVES. YORK N.E.

Exhibits [to Conch. Soc., 3rd May 1893; decollated *Limnæa* *glabra* from Scarborough]. J. of Conch, July 1893, p. 206.

W. H. HEATHCOTE. LANC. W.

Exhibits [to Conch. Soc., 4th Nov. 1892; large *Anodonta cygnea*, 8—9 inches, from Claughton, Lancs.]. J. of Conch., Jan. 1893, p. 136.

W. H. HEATHCOTE. LANC. W.

***Acicula lineata*, var. *alba*, Jeff. [at Fleetwood, 26th July, 14th** Sept. 1890]. Sci. Goss., Feb. 1893, p. 47.

THOMAS HEY. DERBYSHIRE.

Exhibits [to Conch. Soc., 12th Dec. 1891: *Helix nemoralis*, *H. hortensis* and *H. arbustorum*, Derbyshire]. J. of C., Jan. 1892, p. 11. [To Conch. Soc., 4th Nov. 1892; *Anodonta cygnea*, *Unio pictorum*, *Helix nemoralis*, *H. hortensis*, *H. virgata*, *H. caperata*, *H. rufescens*, and *H. cricetorum* from Derbyshire]. J. of Conch., Jan. 1893, p. 136.

W. C. HEY. YORK N.E.

Conchological Notes from West Ayton and Scarborough [giving localities for *Valvata piscinalis*, *Planorbis nautileus*, *P. albus*, *P. contortus*, *Limnæa peregra*, *L. auricularia* var. *acuta*, *L. truncatula*, *Ancylus fluviatilis*, *Succinea putris*, *Vitrina*, *Zonites cellarius*, *Z. nitidulus*, *Z. alliarius*, *Z. crystallinus*, *Z. fulvus*, *Z. purus*, *Helix aspersa*, *H. hispida*, *H. rotundata*, *H. virgata*, *H. nemoralis*, *H. hortensis*, *H. caperata*, *H. fusca*, *H. sericea*, *H. arbustorum*, *H. pygmæa*, *H. pulchella* and var. *costata*, *Bulimus obscurus*, *Pupa muscorum*, *P. umbilicata*, *Vertigo pygmæa*, *V. pusilla*, *Balea*, *Clausilia rugosa*, *Cl. laminata*, *Zua*, *Carychium*, and *Cyclostoma*]. Nat., Dec. 1892, p. 368.

W. C. HEY. YORK N.E.

Donations to Collections [of Conch. Soc., 4th Nov. 1892; Limnæa *auricularia* var. *acuta*, river Derwent near West Ayton]. J. of Conch., Jan. 1893, p. 133.

W. HOWARD. YORK MID W.

Donations to Collections [of Conch. Soc., 31st May 1893; six-banded *Helix nemoralis* from Adel, Leeds]. J. of Conch, July 1893, p. 206.

GEORGE JOHNSTON. CHEVIOTLAND.

Selections from the Correspondence of Dr George Johnston [with lists of shells found near Berwick at pp. 10, 11, 12, 16, 27, 35, 40, 41, and note of *Limax cinereo-niger* at Twizell (p. 116)].

H. WALLIS KEW. LINC. N.

Exhibits [to Conch. Society; *Limnæa peregra, L. truncatula,* *Sphærium lacustre*, and a *Pisidium* from an isolated pond near Welton-le-Wold, Lincs.]. J. of C., July 1892, p. 87.

H. WALLIS KEW. LINC. N., NOTTS.

The Faculty of Food-Finding in Gastropods [discussed at length, with illustrative evidence as to *Limax flavus* at Tuxford, *Limnæa peregra* at Louth, and *Arion hortensis, A. circumscriptus*, and *Agriolimax agrestis* at Tuxford]. Nat., May 1893, pp. 145-159.

HARRY WALLIS KEW. NOTTS, LANC. W. AND S., LINC. N., CHESHIRE, YORK S.E., MID W., S.W., N.E., DURHAM.

The Dispersal of Shells | An Inquiry into the Means of Dispersal possessed by Fresh-water | and Land Mollusca | By | Harry Wallis Kew, F.Z.S. | with a Preface by | Alfred Russel Wallace, LL.D., F.R.S., etc. | with illustrations. | London | Kegan Paul, Trench, Trübner & Co., Ltd. | . . 1893. [International Scientific Series, Vol. 75, crown 8vo., cloth, xiv. + 291 pages, price 5s.] [Numerous species referred to from the counties specified above]. Review by J. T. C. in Sci. Goss., March 1894, pp. 15-16 [repeats fig. of *Sphærium corneum* adhering to leg of *Dytiscus*, Lincolnshire, 1888].

EDGAR LEOPOLD LAYARD. LINCS.

Mimicry in Mollusca [with a passing reference to his finding in Lincolnshire over 50 years ago *Helix hortensis* var. *arenicola*]. J. of Conch., July 1894, p. 387.

T. A. LOFTHOUSE. YORK N.W.

[Mollusca observed by] the Yorkshire Naturalists' Union at Aysgarth [on 22nd May 1893; *Planorbis albus, Arion subfuscus, Limax arborum, A. minimus, A. circumscriptus, Hyalinia pura, H. fulva, Cochlicopa lubrica, Carychium, Helix nemoralis, H. cricetorum, Arion ater, H. hortensis, Balea, Vitrina, Clausilia perversa, H. lapicida, Hyalinia cellaria, Pupa cylindracea, H. rupestris, H. arbustorum, H. rufescens, H. hispida, H. granulata, Agriolimax agrestis, H. alliaria, H. nitidula, H. rotundata, Succinea putris, Limnæa peregra*, and *Ancylus fluviatilis*, with details]. Nat., Aug. 1893, p. 225.

F. C. LONG. LANC. W.

***Vertigo pusilla* in Lancashire [at Silverdale, July 1891, in company** with *Vitrina, Helix rupestris*, and *H. pulchella*]. Sci. Goss., June 1892, p. 143.

F. C. LONG. LANC. S.

***Planorbis dilatatus* [and its occurrence at Gorton, Pendleton,** Burnley, and Gannow; details given]. Nat. Journ., July 1892, p. 5.

F. C. LONG. LANC. S.

Collecting *Paludina contecta* [at Huncoat near Accrington, in a pond choked with *Anacharis alsinastrum*; *Limnæa peregra, Planorbis albus, Sphærium corneum*, and *Pisidium pusillum* also noted]. Nat. Journ., Nov. 1892, pp. 52-3.

PERCY LUND. YORK S.W.

Exhibit [to Conch. Society, 26th July 1893; *Limax maximus* v. *cellaria* from Bradford]. J. of Conch., Oct. 1893, p. 239.

H. A. MACPHERSON. CUMBERLAND.

A Vertebrate | Fauna of Lakeland | including Cumberland and Westmorland | with Lancashire North of the Sands | . . | . . | . . | . . | . . | . . | . . | . . Edinburgh | 1892 [with a note at p. xxv. that in 1845 T. C. Heysham contemplated issuing a work on The Land and Fresh-water Shells of Cumberland, but was deterred by expense; it does not appear whether the MS. still exists].

J. E. Mason. Linc. N.

Donations to Collections [of Conch. Soc., 1st March 1893; *Clausilia perversa* and *Cl. laminata* from Well Vale, near Alford]. J. of Conch., April 1893, p. 173.

Herbert Milnes. Derbyshire.

Donations to Collections [of Conch. Soc., 5th Oct. 1892; *Helix arbustorum* and vars. *cincta* and *flavescens*, Winster]. J. of Conch., Jan. 1893, p. 130.

Herbert Milnes. Derbyshire, Notts.

Exhibits [to Conch. Soc., 5th Oct. 1892; *Helix arbustorum* v. *flavescens*, Winster, Derbyshire; and large *Bythinia tentaculata* from the Trent at Nottingham]. J. of Conch, Jan. 1893, p. 131.

Herbert Milnes. Derbyshire.

List of the Land and Freshwater Shells of Derbyshire [enumerating, with localities, 11 species and 8 varieties of slugs, 48 and 51 of land and 41 and 31 of freshwater species]. J. of Conch., Oct. 1893, pp. 274-288.

W. Moss. Isle of Man.

Exhibits [to Manchester Branch, Conch. Soc., 13th Oct. 1892; *Pisidium pusillum* and *Limnæa truncatula* v. *minor*, Isle of Man]. J. of Conch., Jan. 1893, p. 132.

[W.] Moss and [R.] Cairns. Isle of Man.

Exhibits [to Manchester Branch; vars. of *Helix ericetorum*, *Bulimus acutus*, *H. rotundata* v. *alba*, *Succinea elegans*, *Pupa ringens* and *Carychium* from Isle of Man (last three new as Manx)]. J. of C., July 1892, p. 88.

W. Moss and F. Paulden. Isle of Man.

Reproductive Organs of *Bulimus acutus* (*Helix acuta*.) [described and figured from examples collected in 1888-92, in two localities; on the grassy slopes at the foot of the walls of Peel Castle, and on the sand dunes at Whitestrand Bay]. Trans. and Ann. Rep. Manch. Microsc. Soc., 1892, pp. 1-5 and plate 2 of Reprint.

Jas. Murray. Cumberland.

Notes from West Cumberland [anent absence of *H. aspersa* near Carlisle, and its abundance near Whitehaven, where also *H. nemoralis* and *H. rotundata* are very numerous]. Sci. Goss., Aug. 1893, p. 191.

Wm. Nelson. York N.W.

[Mollusca observed by the] Yorkshire Naturalists' Union at Rokeby [on 6th June; *Limnæa peregra*, *L. truncatula*, *Ancylus fluviatilis*, *Arion ater*, *A. hortensis*, *A. circumscriptus*, *A. minimus*, *Limax maximus*, *L. agrestis*, *L. arborum*, *Succinea putris*, *Vitrina*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. purus*, *Z. crystallinus*, *Helix nemoralis*, *H. hortensis*, *H. arbustorum*, *H. hispida*, *H. sericea*, *H. rotundata*, *Bulimus obscurus*, *Pupa umbilicata*, *Balea*, *Clausilia rugosa*, *Cl. dubia*, *Cl. laminata*, *Zua*, and *Carychium*]. Nat., July 1892, pp. 209-210.

Wm. Nelson. York S.W.

A Variety of *Limnæa palustris* [at Shirley Pool near Askern; 15th June 1893; the var. is seven-banded like the v. *picta* of *L. peregra*]. Nat., Aug. 1893, p. 251.

Charles Oldham. Cheviotland, Cheshire, Notts.

Exhibits [to Conch. Soc., 4th Feb. 1891; *Limnæa peregra*, much-encrusted, from a horse trough at Bamborough]. J. of Conch., Oct. 1891, p. 387. [Conch. Society, 12th Dec. 1891: *Helix arbustorum* from Budworth, and *H. hortensis* v. *incarnata* from Baguley]. J. of C., Jan. 1892, p. 11. [Conch. Soc., Sept. 1892; *Limax flavus* and type of *Amalia gagates* from Sale]. J. of Conch., Jan. 1893, p. 129. [Conch. Soc., 5th Oct. 1892; *Limax flavus* and *L. maximus* v. *cellaria*, Farnsfield.

Notts; *L. flavus*, Oxton, near Southwell; *Amalia gagates* v. *rava*, Ashton-on-Mersey, Cheshire]. J. of Conch., Jan. 1893, p. 131.

CHARLES OLDHAM. NOTTS.

Donations to Collections [of Conch. Society, 5th Oct. 1892; *Helix aspersa* var. *undulata*, Southwell]. J. of Conch., Jan. 1893, p. 130.

A. L. READE. LANC. S.

A Few Words on the Study of Conchology. With special reference to the neighbourhood of Crosby [near Liverpool; includes notes upon the occurrence of *Limnæa stagnalis*, *L. peregra*, *Physa hypnorum*, *Planorbis marginatus*, *Paludina contecta*, *Cyclas 'rivularia,' Unio pictorum*, *Zua lubrica*, and *Bulimus obscurus*, with their comparative frequency]. Merchant Taylors' [School] Review, Crosby, No. 5, April 1892, pp. 134-140.

HUGH RICHARDSON. YORK S.W.

The Shells of Ackworth and Went Vale [reprinted from Nat. Hist. Journal for Feb., March, April, May, June, Sept., Oct., Nov., Dec. 1887; see notice of original in Nat., Sept. 1888, p. 259]. 8vo. reprint of 30 pages on one side of paper only, with map. York, 1887.

GEORGE ROBERTS. YORK S.W. AND 'TRENT.'

Additional Varieties of *Unio tumidus* [described: vars. *wilcocki* and *constricta*, from the river Trent and from the Barnsley Canal, near Wakefield]. Nat., March 1892, p. 86.

W. DENISON ROEBUCK. YORK MID W.

[Mollusca observed by] the Yorkshire Naturalists' Union at Horton-in-Ribblesdale [on 14th May 1892: *Pupa secale*, *Helix aspersa*, *Limax lævis*, *L. agrestis*, *Arion subfuscus*, *A. circumscriptus*, *Helix rupestris*, *Balea*, *Clausilia dubia*, *Helix rufescens*, *Cl. rugosa*, *Zua*, *Ancylus fluviatilis*, *Limnæa peregra*, *Arion ater*, *A. minimus*, *Limax arborum*, *Vitrina*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. crystallinus*, *Z. fulvus*, *H. nemoralis*, *H. arbustorum*, *H. concinna*, *H. hispida*, *H. rotundata*, and *Pupa umbilicata*]. Nat., June 1892, pp. 180-181.

W. DENISON ROEBUCK. ISLE OF MAN.

***Arion ater* var. *bicolor* in . . and the Isle of Man [at Douglas,** end of August, taken by F. Taylor]. J. of C., July 1892, p. 77.

W. DENISON ROEBUCK. YORK S.E. AND N.E.

Exhibits [to Conch. Soc.; *Valvata piscinalis*, *Limnæa peregra*, *Sphærium corneum*, and *Pisidium pusillum*, all abundant; and a single *L. stagnalis*, all subfossils from mud-cliffs at Withernsea]. J. of C., July 1892, p. 88. [Conch. Soc., 5th Oct. 1892: *Helix fusca* from near Castle Howard]. J. of Conch., Jan. 1893, p. 131. [Conch. Soc., 6th Sept. 1893: *Limax cinereo-niger* v. *maura* from Roppa Plantation, Bilsdale, 20th Aug.] J. of Conch., Oct. 1893, p. 240.

W. DENISON ROEBUCK [Signed 'The Recorder.'] YORK N.E.

Exhibits [to Conch. Soc., 10th May 1892; unicolorous reddish form of *Limax flavus* from Pickering (John Braim)]. J. of C., July 1892, p. 83.

W. DENISON ROEBUCK. YORK N.E.

Donations to the Collections [of the Conch. Soc., 7th Dec. 1892; *Helix lapicida* from Wass Bank, Coxwold]. J. of Conch., April 1893 p. 168.

W. DENISON ROEBUCK. YORK MID W.

Six-banded *Helix nemoralis* at Adel near Leeds [where the species was common, 28th May 1893]. Nat., June 1893, p. 176.

W. DENISON ROEBUCK. YORK N.E.

***Limax cinereo-niger* in Bilsdale, Yorkshire [one 20th Aug., in** Roppa Plantation]. Nat., Sept. 1893, p. 280.

July 1898.

W. Denison Roebuck. York N.E.

[Mollusca observed by] Yorkshire Naturalists at Kirkby Moorside [on 10th July 1893; *Clausilia laminata, Cl. rugosa, Cochlicopa lubrica, Helix hortensis, H. rotundata, H. hispida, Hyalinia cellaria, H. crystallina, Arion ater, A. minimus, Agriolimax agrestis, Limax maximus, L. marginatus* (=*arborum*), *and Helix itala* (=*ericetorum*), with localities]. Nat., Oct. 1893, p. 318.

W. Rushforth. York S.W.

***Testacella scutulum* at Horbury [near Wakefield, one, 30th March** 1892; named by J. W. Taylor]. Nat., May 1892, p. 154.

R. F. Scharff. Isle of Man.

Some Remarks on the Distribution of British Land and Fresh-water Mollusca [with incidental mention of *Bulimus acutus* in Cheshire and Isle of Man]. The Conchologist, 25th March 1892, p. 4.

Edward Self. York S.W. or Mid W.

Donations to Collections [of Conch. Society; *Testacella haliotidea*, orchid-house at Ferniehurst, Shipley, March 1892]. J. of C., April 1892, p. 48. [*Testacella scutulum* from Backhouse's Nurseries, York]. J. of C., July 1892, p. 86.

Edward Self. York S.W. or Mid W.

***Testacella haliotidea* at Shipley [its occurrence treated of in detail,** and opinion expressed that it was imported from York]. Nat., May 1892, p. 154.

Edward Self. York Mid W.

***Testacella scutulum* at Holgate, near York [at Backhouse's** Nurseries, where it is common]. Nat., Aug. 1892, p. 253.

J. Chas. Smith. Westmorland, Cumberland.

A Day in Westmoreland [at Clifton and Lowther, in June; noting *Clausilia rugosa* and v. *dubia, Helix arbustorum, Bulimus obscurus, Pupa umbilicata, Azeca, Zua, H. pulchella, Carychium, Clausilia laminata, H. rupestris, Balea, H. aspersa* (also noted as rare in Cumberland), and *Unio margaritifer*]. Sci. Goss., July 1893, pp. 158-9.

R. Standen. Lanc. W., York Mid W.

***Vertigo pusilla* Müll. in Lancashire [taken by F. C. Long at** Silverdale, July 1891; larger and paler than at Ingleton; first record for Lancs.]. J. of C., Jan. 1892, p. 7.

R. Standen. Isle of Man.

***Helix aspersa* Müll. monst. *sinistrorsum* Taylor in the Isle of Man** [taken at Peel, by R. Cairns]. J. of C., Jan. 1892, p. 24.

R. Standen. Lanc. S.

Observations on the Reproduction of the Dart, during an attempt to breed from a sinistral *Helix aspersa* Müll. [taken at Whalley in June 1889, and paired with dextral example taken at Meols; elaborate details given]. J. of C., April 1892, pp. 33-38.

R. Standen. York S.W.

***Limnæa stagnalis* L. monst. *sinistrorsum* [taken in a 'drain near** Doncaster, 1860']. J. of C., April 1892, p. 41.

R. Standen. Lanc. S., York Mid W.

Extraordinary Finds of *Vertigo pygmæa* Drap. at Clitheroe, Lancashire, and Beezley, Yorkshire [in great abundance; at the former place associated with *Zonites fulvus, Helix pygmæa, H. pulchella, Zua, Vitrina*, and *Bulimus obscurus*]. J. of C., July 1892, p. 89.

R. STANDEN. CHESHIRE.

Pupa ringens in Cheshire [at Marple, with _Helix aculeata_, *Carychium*, *Vertigo edentula*, *Zonites purus*, *Z. fulvus*, *Z. crystallinus*, and *Limnæa truncatula*, all in abundance; *P. ringens* new for Cheshire]. J. of C., July 1892, p. 89.

F. TAYLOR. LANC. S.

Exhibits [to Manchester Branch; _Zonites excavatus_, _Z. fulvus_, *Z. alliarius*, *Z. crystallinus*, *Z. cellarius*, *Zua*, *Vertigo substriata* from Holden Clough; *Planorbis nautileus* monst. *scalariforme* from Fitton Hill, Oldham; new localities]. J. of C., July 1892, p. 88.

J. W. TAYLOR. YORK MID W.

Planorbis albus v. _sulcata_ [described as new; from a pond near Leeds]. J. of Conch., July 1893, p. 209.

B. TOMLIN. YORK MID W.

Notes [on Mollusca; _Clausilia rugosa_ at Ingleton and _Cl. laminata_ at Wetherby, referred to in reference to the bleaching of the apex]. Brit. Nat., March 1892, p. 47.

H. TURNER. YORK MID W.

Donations to Collections [of Conch Soc., 31st May 1893; _Helix_ *nemoralis* from the Cemetery, Horsforth, Leeds]. J. of Conch., July 1893, p. 207.

FRANK TURTON. YORK S.W.

Donations to Collections [of Conch. Soc.; distorted _Limnæa_ *peregra*, Gunthwaite, near Penistone]. J. of C., July 1892, p. 86.

G. SHERRIFF TYE. DERBYSHIRE.

On the Periostracum of _Helix arbustorum_, Müll. [being double-layered, as evidenced in specimens of this species and var. *flavescens*, which occur in plenty at Buxton and Castleton, Derbyshire]. The Conch., 29th Sept. 1892, pp. 53-54.

EDGAR R. WAITE. YORK MID W.

Testacella scutulum at Headingley, Leeds [with details of the find, and reference to previous records of *T. haliotidea* at Shipley]. Nat., Jan. 1892, p. 12.

R. WIGGLESWORTH. LANC. S.

New Variety of _Helix Arbustorum_ [described but not named; from Clitheroe, Lancs., 14th May 1892]. Sci. Goss., Aug. 1892, p. 187.

R. WIGGLESWORTH. LANC. S.

Exhibits [to Conch. Soc., 31st May 1893; _Sphærium corneum_ and *Limnæa peregra* from Clayton-le-Moors, near Accrington]. J. of Conch., July 1893, p. 207.

NOTE—COLEOPTERA.

Bidessus geminus at Askham Bog.—On 25th May I took one specimen of *Bidessus geminus* at Askham Bog. Only one Yorkshire record previously existed, viz., 'Hebden Bridge Watercourse, 1831, S. Gibson.' This solitary record seems to have been received with suspicion, for Canon Fowler writes '*said* to have occurred in Yorkshire.' I was therefore glad to vindicate the claim of this elegant little insect to a place in the Yorkshire list, and to add one more species to the rich list of Askham *Hydropori*.—W. C. HEY, West Ayton, York, 31st May 1898.

NOTE—BOTANY.

Medicinal Herbs used near Pickering.—The dalesmen of the North Yorkshire Moors are still in the habit of using their native plants as drugs. Some are used from a superstitious motive, as the flower of Gorse (*Ulex europæus*) for jaundice, from their yellow colour; but others are of real value. I have found much interest in collecting instances of this kind, and I give a short extract from a paper read last year before the York Medical Society, containing a few of the plants taken at random, with their local names and principal active principles. In each case the note was taken from personal observation, and entered in a book with the date and other particulars.

Bot. Name.	Local Name.	Act. Prin.
Erythræa centaurium.	Harb Sanctuary.	Erythrocentaurin.
Marrubium vulgare.	Horehound.	Marrubiin.
Achillea millefolium.	Yarrow.	Achilleïn and Achilleic Acid.
Nepeta glechoma.	Ground Ivy.	
Galium sp.	Hayrop.	Galitannic Acid.
Aconitum sp.	Blue Peter.	Aconitine.
Menyanthes trifoliata.	Bog Bean.	Menyanthin.
Chelidonium majus.	Swallow Wort.	Chelerythrin. Chelidoxanthin. Chelidonin. Chelidoninic Acid.
Linum catharticum.	Purging Flax. Mountain Flax.	
Digitalis purpurea.	Fox Dockens.	Digitalin.

These few only are mentioned among many as being notable; but I hope before long to make a complete list.—C. T. T. Comber, Pickering, 23rd June 1898.

NOTES—GEOLOGY.

Large Glacial Boulder at Swaby, Lincolnshire.—A very large boulder has been discovered lately on Kemp's farm, Swaby, now occupied by Mr. Overton. The Louth Naturalists' Society took up the matter, and, with the consent of Mr. Overton, made arrangements for excavating around it in order to get its dimensions. The result well repaid them, as they found they had unearthed out of the boulder clay probably one of the largest erratics in this part of Lincolnshire. It is much larger than the noted Blue Stone which used to stand at Mercer Row corner at Louth, but is now in Mr. Burditt's yard. There are no striations on it as far as can be seen at present, and it is angular in form. Its greatest width from east to west is 9 ft. 8 in., on the north-west side it is 7 ft. 2 in. in length, and it is 2 ft. 6 in. in depth. A chip was sent by the society to Mr. Percy F. Kendall, of Leeds, who pronounced it to be *Hornblende Schist*, and in his opinion it came from Norway or Sweden, where such rocks are common. It might have come from the Highlands of Scotland. The society has thanked Mr. Overton for his very kind co-operation, and they propose to ask the authorities of Magdalen College (the owners of the estate) to take steps to secure the preservation of such an interesting relic of the past. I may say that the site is viâ Mr. Milson's farmhouse, two miles from Authorpe Station, and ten minutes' walk from Swaby village. Benj. Crow, Hon. Sec. Louth Naturalists' Society, Louth, 21st June 1898.

Fossil Limpet at Pickering. Mr. Wigley, of Pickering, brought to me last year two somewhat unusual specimens; they were the internal casts of a limpet, the *Patella rugosa* var., Hudleston (vide Hudleston, Geol. Mag., 1881, pp. 125, 126, and pl. 4, fig. 5, where he says: 'An imperfect specimen from the upper calcareous grit of Pickering may belong here, p. 126). The two specimens, which were very nearly perfect, were found by Mr. Wigley in the calcareous grit of the quarries on the New Bridge Road, and one of them is now in the British Museum.—C. T. T. Comber, Pickering, 23rd June 1898.

Naturalist.

NATURAL HISTORY NOTES FROM WHITBY,

May 1896 to February 1898.

THOMAS STEPHENSON,
Whitby.

MAMMALIA.

1896 July 17.—***Pipistrellus noctula.*** **Noctule Bat.** Observed flitting about the West Cliff and Coast-Guard Battery.

Lutra lutra. **Otter.** One has been observed in Ruswarp Dam.—Whitby Times, 10th July 1896.

Putorius ermineus. **Stoat.** A female was killed on the farm occupied by Mr. Spence, near Whitby Abbey.

Oct.— ***Vulpes vulpes.*** **Fox.** Two sent to Mr. J. H. Wilson to be preserved.

Sciurus vulgaris. **Squirrel.** One sent to Mr. Wilson to be preserved.

1897 Feb. 6.—***Lutra lutra.*** **Otter.** An old male, weighing 20 lbs., was trapped and killed at Egton Bridge; preserved by Mr. J. H. Wilson.

May 8.—***Plecotus auritus.*** **Long-eared Bat.** Captured near Sleights.

July 5.—***Lutra lutra.*** **Otter.** During the past few weeks two or three in Ruswarp Dam have been committing depredations on the fish, etc., and on Monday last, Mr. H. K. Williamson, of Sleights, succeeded in shooting a fine dog specimen, which has been purchased by Dr. English, who will have the animal preserved.—Whitby Times, 9th July 1897.

July 20.—***Lutra lutra.*** **Otter.** Two young ones, male and female, about three-parts grown, the former weighing 13 lbs., the latter 11 lbs., were killed near Grosmont; sent to Mr. J. H. Wilson to be preserved.

July 21.—***Phoca vitulina.*** **Seal.** About half-past two o'clock this morning a fine young example was captured by Thomas Henry White, on the sands opposite the West Cliff Saloon. White and three other youths had been fishing during the night, and were having a walk on the sands, when they saw the Seal. After much difficulty the animal was caught by White, who threw his coat over it. It was

afterwards taken to Mr. Edward Turner's fish warehouse on the pier and placed in a tub of sea water. It was on exhibition during the day, and was seen by a large number of interested persons.— Whitby Gazette, 23rd July 1897.

1898 Jan. 3.—***Phoca vitulina.*** **Seal.** One captured on the sand opposite the West Cliff Saloon by — Moat.

BIRDS.

1896 June 26.— ***Coccothraustes vulgaris.*** **Hawfinch.** A young female was shot at Ruswarp. Another had been shot in the same garden, but could not be found; these birds had doubtless been bred there, as a third young bird was likewise seen.

Aug. 3.– **Plovers.** A flock of these birds passed over Whitby, whistling and calling, about 11.50 p.m, apparently attracted by the gaslights.

Sept. 14.—***Sterna macrura.*** **Arctic Tern.** Two were seen at sea by Mr. J. H. Wilson.

Sept. 25.— ***Sterna minuta.*** **Little Tern.** Observed in Whitby Harbour.

Sept. 28.—***Mareca penelope.*** **Wigeon.** A young female was shot in Ruswarp Dam.

Sterna minuta. **Little Tern.** Two were seen in Whitby Harbour.

Sept. 30.— ***Sterna minuta.*** **Little Tern.** Several were observed at sea.

Oct. 1.—***Alca torda.*** **Razorbill.** Two old birds and one young one were shot at sea.

Oct. 1. — ***Colymbus septentrionalis.*** **Red-throated Diver.** A young bird was seen at sea.

Oct. 8 and 9.— ***Sterna minuta.*** **Little Tern.** Observed in the harbour.

Oct. 9.—***Ardea cinerea.*** **Common Heron.** Was shot in Glaisdale and sent to Mr. J. H. Wilson to be preserved.

Oct. 31.—***Vanellus vanellus.*** **Lapwing.** A large number of Green and other Plovers were seen near Stripes Farm, Hawsker.

Nov. 11.—***Plectrophanes nivalis.*** **Snow Bunting.** Captured in or near the Abbey Gardens.

Nov. 12 and 13.—***Otocorys alpestris.*** **Shore Lark.** Observed on the Bell in Whitby Harbour by Mr. J. H. Wilson.

Nov. 13.—***Passer montanus.*** **Tree Sparrow.** Sent to Mr. J. H. Wilson to be preserved.

Nov. 18.—***Mergus merganser.*** **Goosander.** Shot near Sleights.

Nov. 29.—***Tachybaptes fluviatilis.*** **Little Grebe.** Captured, in an exhausted condition, by hand in the harbour; several had been observed previously by Mr. J. H. Wilson.

Nov. 30.—***Alca torda.*** **Razorbill.** Two fine mature specimens were shot by Mr. J. H. Wilson at sea between Whitby and Saltwick; he also saw about 60 Scaup Ducks (*Fuligula marila*) off Saltwick, and 7 Red-throated Divers (*Colymbus septentrionalis*).

Dec. 2.—***Scolopax rusticola.*** **Woodcock.** Four were shot by Mr. Rhodes.

Dec. 4.—***Mergus merganser.*** **Goosander.** Immature, shot by Geo. Kitching near Whitehall Shipyards.

Dec. 18.—***Clangula glaucion.*** **Goldeneye.** Two young females shot on Ruswarp Dam.

1897 Jan. 14.—***Mergus merganser.*** **Goosander.** Adult male was shot at Sleightholme's Holme, near Sleights, and sent to Mr. J. H. Wilson to be preserved.

Jan. 22.—***Alcedo ispida.*** **Kingfisher.** Two were observed near the Stone Quay in Whitby Harbour.

Jan. 26.—***Fuligula fuligula.*** **Tufted Duck.** Seen near the Gasworks by Mr. J. H. Wilson.

Jan. 27.—***Limnocryptes gallinula*** **(Jack Snipe)** and ***Gallinago gallinago*** **(Common Snipe).** Several were seen in Factory Fields.

Jan. 28.—***Totanus calidris.*** **Redshank.** Shot on the sand by G. Kitching.

Jan. 29.—***Rallus aquaticus.*** **Water Rail.** Seen in the water-course in Factory Fields.

Feb. 2.—***Larus marinus.*** **Greater Black-backed Gull.** Captured at Runswick.

Feb. 6.—***Fuligula ferina.*** **Pochard.** A mature male and a young female were captured on Ruswarp Carrs.

Feb. 7.—***Podiceps grisegena.*** **Red-necked Grebe.** Captured on the sand by — Carter.

Feb. 7.—***Mergulus alle.*** **Little Auk.** Captured on the sand by Thomas Hill.

Feb. 11.—***Anas boschas.*** **Wild Duck.** A white Wild Duck, with two or three dark feathers, yellow beak, and yellow legs and feet, was shot out of a flock of seven Mallards in Stainsacre Beck, near Stainsacre Bridge, by Mr. W. H. Attlay.

July 12.—***Larus ridibundus.*** **Black-headed Gull.** For the first time, I observed, this year, the young of this species in the harbour; but two or three pairs of mature birds have remained with us through last winter, spring, and summer, and been seen almost daily in the harbour.

Oct.—***Accipiter nisus.*** **Sparrow Hawk.** Female was taken near Lythe.

Nov. 10.—***Somateria mollissima.*** **Eider Drake.** Young, shot on Saltwick Sand by John Kitching this morning.

Nov. 10.—***Plectrophanes nivalis.*** **Snow Bunting.** Was shot on the sands by John Kitching.

Nov. 17.—***Tringa alpina.*** **Dunlin.** Two were shot on the sand by J. Kitching.

Nov. 17. ***Colymbus septentrionalis.*** **Red-throated Diver.** Shot by J. Kitching.

Nov. 23.—***Tringa alpina.*** **Dunlin.** Two shot by J. Kitching.

Nov. 25.—**Wild Geese.** A flock of about 50 were seen by Mr. Rhodes, in Newton Dale, but were too far distant for identification.

Dec. 9.—***Astur palumbarius.*** **Goshawk.** A Hawk, considered to be an immature male of this species, was shot on Wheeldale Moor, and is now in the possession of Mr. J. C. Walker.

Dec. 18.—***Colymbus septentrionalis.*** **Red-throated Diver.** An immature example was shot by J. Kitching.

1898 Jan. 31.—***Larus minutus.*** **Little Gull.** I observed, among a number of Black-headed Gulls (*Larus ridibundus*) an immature specimen of the Little Gull (*Larus minutus*). and have seen the same bird in the harbour nearly every day to the 24th February.

FISHES.

1896, June 8.—***Nerophis ophidion.*** **Snake Pipe-fish** or **Straight-nosed Pipe-fish.** Was brought into Whitby by one of the fishing cobles.

July 15.—***Mugil chelo.*** **Grey Mullet.** One, weighing 3 lbs. 2 ozs., was caught in a salmon net by Matthew Forden.

July 29. ***Pagellus centrodontus.*** **Sea Bream.** Was caught off and brought into Whitby.

July 30.—***Pagellus centrodontus.*** **Sea Bream.** Was caught off and brought into Whitby.

Clupea harengus. **Herring.** The fishery commenced at Whitby; about 30,000 herrings of good quality were landed. One Lowestoft boat brought in 8,000 — prices ranged from 2s. 4d. to 3s. 6d. per hundred; market rather dull. There was also a good supply of Mackerel (*Scomber scomber*) and Cod (*Gadus morrhua*).

Sept. 11 and 14.—***Caranx trachurus.*** **Scad** or **Horse Mackerel.** Several were brought into Whitby.

Orthagoriscus mola. **Short Sun-fish.** Taken by Wm. Moat near Whitby Rock. It measured 2 feet 5 inches from the tip of the upper to the tip of the lower fin, and was about 2 feet in length.

Sept. 22.- **Short Sun-fish.** Another was caught off Whitby by Wm. Dryden. It measured 1 foot 8 inches from the snout to the outer edge of caudal fin, and 2 feet 6½ inches from tip to tip of fins, but was thin and in poor condition.

Sept. 16. ***Trigla cuculus.*** **Red Gurnard.** Was brought into Whitby.

Zoarces viviparus. **Viviparous Blenny.** Caught in the harbour. This fish is locally called 'Borrbut.'

Oct. 8. — ***Belone vulgaris.*** **Garfish.** One, 23 inches long and 5½ inches in girth, was picked up from the sand.

Oct. 10. — ***Labrax lupus.*** **Common Basse.** One, 13½ inches long, 7½ inches in girth, weight 14½ oz., was caught in the harbour on a hook baited with Peeler (Dog Crab).

Gastrosteus spinachia. **Fifteen-spined Stickleback.** Caught in á clasp net from the Fish Quay.

Nov. 24.—***Pagellus centrodontus.*** **Sea Bream.** One, with other fish, brought into Whitby by the fishermen.

1897 Mar. 21.—***Syngnathus acus.*** **Great Pipe-fish.** Washed ashore on the sand.

April 30.—***Salmo salar.*** **Salmon.** The first of the season was caught in net by Messrs. Allan and White. It weighed 7½ lbs., and was sold at 2s. per lb.

Gadus virens. **Coal-fish.** There is at present a large quantity of Billets (young Coal-fish) in what is known as Saltwick Hole; on catching and gutting three of them (weighing about 7 lbs. each), a total of 18 Smelts (young of the *Salmo salar*), each about 5 inches long, were discovered to have been eaten by them.

July 29.—***Clupea harengus.*** **Herring.** Two catches (400 and 500 respectively) were landed at Whitby, and were sold at 4s. 6d. and 5s. per hundred.

Sept.—***Zoarces viviparus.*** **Viviparous Blenny.** Two were caught in Whitby Harbour.

Lamna cornubica. **Porbeagle Shark.** A very small one, about 3 feet long, was caught in the herring nets and brought into Whitby.

Oct.—***Pleuronectes limanda.*** **Dab.** One, weighing 2 lbs. 10 oz., was caught in a net in Whitby Harbour.

Oct. 23.—***Pagellus centrodontus.*** **Sea Bream.** One brought into Whitby.

Nov. 16.—***Labrus maculatus.*** **Ballan Wrasse.** Brought by one of the cobles.

Nov. 20.—***Labrus maculatus.*** **Ballan Wrasse.** Brought by one of the cobles.

Nov. 23.—***Labrus maculatus.*** **Ballan Wrasse.** Two were brought by one of the cobles.

NOTE—FISHES.

Arctic Chimæra in the North Sea.—I have recently had one of these most grotesque-looking fish (*Chimæra monstrosa* L.) sent from the fish pontoon at Grimsby, several having been brought in by the smacks in the last three weeks. It appears to be more nearly allied to the Sharks than to any other genus. The skeleton is cartilaginous, and the head, which I have prepared, seems constructed of substances like thick parchment, the skull itself being very small in proportion to the mass of flesh which covers it. All the illustrations I have seen fail, in some respect or other, accurately to represent the fresh fish. In the present example the length was a little over three feet, gradually graduating to the tail, which was very long, slender, and whip-like. The eyes large; nostrils very open and conspicuous; mouth rather small, and placed, as in the sharks, under the projecting muzzle. The dentition is very curious, in the front of the upper jaw two broad and fluted incisors; on the palate, and concealing the base of the incisors, are two broad triangular plates with crenulated edges. In the lower jaw also are two prominent plates of the same character, the edges of which, when the mouth is shut, close on the upper incisors. The Chimæra is a fish of a very ancient lineage, dating back to the Lias. Judging from its teeth it probably feeds on crustaceans and shell fish.—JOHN CORDEAUX, Great Cotes House, R.S.O., Lincoln, 6th June, 1898.

MOSSES NEW TO YORKSHIRE.

WILLIAM INGHAM, B.A.,
Organising Inspector of Schools, 47, Haxby Road, York.

THE following is a list of Mosses new to Yorkshire, as far as I can gather from the last London Catalogue of British Mosses, from Braithwaite's British Moss Flora, and from The Students' Handbook of British Mosses.

I am much indebted to Mr. H. N. Dixon, M.A., F.L.S., for his kindness in carefully verifying every moss in the list, except a few of the Amblystegia, which have been kindly verified or named by Dr. Braithwaite.

Sphagnum subsecundum var. ***viride*** Boul. This I found submerged in deep water in one of those pools, now fast disappearing from Strensall Common, 26th Feb. 1897. The leaves are almost squarrose, and therefore it is very near the var. *squarrosulum* Grav. Mr. Dixon calls this moss an interesting form of var. *viride*.

Sphagnum squarrosum formā ***compacta.*** On Strensall Common, 26th Feb. 1897.

Sphagnum cuspidatum var. ***falcatum*** Russ. On Cronkley Fell, Teesdale, 5th June 1897.

Andreæa petrophila var. ***acuminata*** Schp. On Holwick Scar, Teesdale, June 1897.

Andreæa petrophila var. ***homomalla*** Thed. On the White Force, Teesdale, June 1897.

Rhacomitrium heterostichum var. ***gracilescens*** B.&S. In the White Force, Teesdale, June 1897.

Tortula subulata var. ***subinermis*** Wils. On the ground, Staddlethorpe, 15th Feb. 1897.

Barbula fallax var. ***brevifolia*** Schultz. Sherburn-in-Elmet, 26th April 1897; Castle Howard, 23rd April 1897; Brodsworth, near Doncaster, 21st March 1898; and Langdon Beck, Teesdale, 5th June 1897, just outside Yorkshire. All four gatherings were in fruit, and the habitats of the first three were Magnesian Limestone quarries.

Trichostomum crispulum var. ***viridulum*** Bruch. Jackdaw Crag Quarry, Tadcaster, 24th Sept. 1897.

Weberæ nutans var. ***longiseta.*** Skipwith Common, 20th July 1897.

Brachythecium rutabulum var. ***longisetum*** Bry. Eur. Strensall Common, 1st. Jan. 1897, and 26th Feb. 1897.

Amblystegium Kochii B.&S. On bare ground in damp shady place near Sherburn-in-Elmet, 9th May and 28th May 1898. This species, which has hitherto been recorded from only Pond Leigh, Hurstpierpont, Sussex, by Mitten, and from Surrey, is an important addition to the Yorkshire Moss Flora. It has been very carefully examined by both Dr. Braithwaite and Mr. Dixon, and there is no doubt about it being *A. Kochii*. I have been fortunate in finding the same moss in the Jackdaw Crag Quarry, Tadcaster, 3rd June 1898.

Amblystegium Juratzkæ Schimp. This new species for Yorkshire I found on wet stones at Staddlethorpe, near Goole, 20th October 1897 and 25th May 1897. Again, on 28th May 1898 I found the same moss on the damp, clayey side of a Magnesian Limestone quarry near Sherburn-in-Elmet. Mr. Dixon has very carefully compared this moss with the original gathering by Jacob Juratzka himself, a specimen of which I have from Vienna, and he says about the Staddlethorpe plant, 'certainly *A. Juratzkæ*,' and about the Sherburn plant, 'it is incontestably *A. Juratzkæ*.'

This moss has hitherto been recorded only from Poynings, Sussex (Mitten, 1895).

Amblystegium Kneiffii var. ***pseudofontanum*** Sanio. Skipwith Common, 17th Nov. 1897. Hitherto found at Oakmere, Cheshire (Holt, 1887). Verified by Dr. Braithwaite.

Amblystegium Kneiffii var. ***gracilescens*** Schimp. Clifton Ings, York, 20th April 1897. Verified by Mr. Dixon.

Amblystegium Kneiffii var. ***tenue*** Schimp. Barlby, near Selby, 19th November 1897. Verified by Dr. Braithwaite.

Amblystegium fluitans var. ***paludosum*** Sanio. Skipwith Common, 21st April 1898. Named by Dr. Braithwaite. I found this in fruit, floating in large masses in a large pool.

Amblystegium fluitans var. ***falcatum*** Schimp. Strensall Common, floating in pool, 11th April 1898.

I shall be pleased to send a specimen of *Sphagnum subsecundum* var. *viride*, and of *Amblystegium* or *Hypnum fluitans* var. *paludosum*, to any bryologist who wishes to have one.

In a future issue I hope to send a list of rare Hepatics I have found in Yorkshire, all of which have been kindly verified by Mr. M. B. Slater, F.L.S., of Malton.

ADDITIONS TO THE LIST OF HEMIPTERA-HETEROPTERA OF LINCOLNSHIRE.

JAMES EARDLEY MASON,

Norfolk House, Lincoln.

Since the publication of the last supplementary list, which appears at p. 128 of 'The Naturalist' for 1889, the following species have been ascertained to occur in the county.

All have been either verified by Mr. Edward Saunders or compared with others previously submitted to him.

PENTATOMIDÆ.

Zicrona cærulea L. Crowle; Love Lane, one, May 1888 (Edward Woodthorpe).

Acanthosoma dentatum DeGeer. Linwood Warren; 20th September 1897 (E. A. W. Peacock). Greetwell; on Scotch fir (*Pinus sylvestris*), one, male, 11th April 1898.

Acanthosoma* (*Elasmostethus*) *interstinctum L. Cadney; Burnt Wood, on birch (*Betula alba*), 13th September 1897 (A. Thornley). Skellingthorpe Wood, one, 22nd May 1898 (C. P. Arnold).

COREIDÆ.

Myrmus miriformis Fall. Cadney; Burnt Wood, off rushes (*Juncus* sp.), 13th September 1897 (A. Thornley).

LYGÆIDÆ.

Nysius thymi Wolff. Chapel St. Leonards; abundant on the sandhills, 23rd August 1886. Mablethorpe; sandhills, several, 25th July, 1889.

Ischnorhyncus resedæ Panz. (***didymus*** Zett.). Scotch fir, one, 11th April 1898.

Ischnorhyncus geminatus Fieb. (***resedæ*** D.&S.). Manton Common; abundant at roots of heather (*Calluna vulgaris*), 14th September 1897 (A. Thornley).

Macrodema micropterum Curt. Manton Common; abundant at roots of heather, 14th September 1897 (A. Thornley).

Stygnus rusticus Fall. Torksey; 1896 (S. Pegler).

Peritrechus luniger Schill. Holbeck; Low Wood, under moss, two, 8th October 1897.

Trapezonotus agrestis Fall. Mablethorpe; sandhills, several, 25th July 1892. Woodhall Spa; one, 20th June 1890.

Scolopostethus decoratus Hahn. (***ericetorum*** Leth.). Manton Common; abundant at roots of heather, 14th September 1897 (A. Thornley). Woodhall Spa; several at roots of heather, 20th June 1890.

TINGIDIDÆ.

Monanthia (***Platychila***) ***cardui*** L. Cadney; on thistle (*Carduus lanceolatus*), 13th September 1897 (A. Thornley). Also at Grantham and Theddlethorpe (A. Thornley).

REDUVIIDÆ.

Coranus subapterus DeGeer. Manton Common; on the lichenous sandy part, 14th September 1897 (A. Thornley).

Nabis lativentris Boh. (***apterus*** D.&S.). Holbeck; two undeveloped, 2nd August 1897.

CIMICIDÆ.

Anthocoris confusus Reut. Cadney; one, 20th April 1898 (E. A. W. Peacock).

CAPSIDÆ.

Bryocoris pteridis Fall. Burwell Wood; bracken (*Pteris aquilina*), two undeveloped, male and female, 17th September 1889. Holbeck; on shield-fern (*Aspidium filix-mas*), several, 2nd August 1897.

Cyllocoris flavonotatus Boh. (***flavoquadrimaculatus*** DeGeer, Reut.). Well Vale; on oak (*Quercus pedunculata*), five, 16th June 1889.

Orthotylus scotti Reut. Well Vale; one, 8th September 1886.

Atractotomus magnicornis Fall. Holbeck; larch (*Larix* sp.) 2nd August 1897.

CORIXIDÆ.

Corixa mæsta Fieb. Bilsby; eight, 1st June 1889.

Corixa limitata Fieb. Well; one, 21st May 1888; two, 17th November 1889.

Corixa (***Callicorixa***) ***concinna*** D.&S. Well; plentiful, 17th May 1889.

Corixa (***Glænocorisa***) ***carinata*** Sahlb. Well; a few, 17th May 1889.

Corixa (***Cymatia***) ***bonsdorffii*** Sahlb. Market Rasen; brick-pits, six, 4th May 1898.

20th June 1898.

A RAMBLE IN THE ISLE OF LINDISFARNE.

Miss E. SPENCER HICK,

3, Belle Grove Villas, Newcastle-on-Tyne.

"Human things must be known to be loved."—*Pascal.*

"Drops of water falling, falling, falling, brim the chatty o'er;
Wisdom comes in little lessons, little grains make largest store."—*Sanscrit Proverb.*

With what pleasure do I recall last autumn, with its visit to the Isle of Lindisfarne, that isle physically so insignificant, yet so great in the history of our northern Christianity. So sacred from its associations as to suggest some stately cathedral, with its blue dome far away among the fleecy clouds, its sandy pavements and its grassy aisles, its walls a mass of green and red with hips and haws, its seats, the varied forms of cellular and flowerless plants. Its ancient priory, the pulpit, still stands glorious in its ruins, a fit memorial to the earnest Celtic missionaries, to whom our northern Church owes undying gratitude. Yea, more, to whom belongs the honour, now strangely overlooked, of establishing the Christian Faith, never more to be uprooted, in London and the south, after 37 years of heathenism, when the Italian Bishops, the successors of that St. Augustine whose memory has been so honoured this year by over 100 Anglican Bishops, preferred voluntary exile on the continent to a martyr's crown in England; only one of whom, Canterbury's Archbishop, stood firm to his post, and that only because he dreamt St. Peter flogged him for his cowardice!

I saw, as in a vision, a long line of Celtic heroes. St. Aidan, carrying the model of the priory and the monastery he had founded; Cedd, enveloped in a cloud, through which shone, vague and indistinct, the outline of St. Paul's Cathedral, on the site of which he had established Christian services; haughty Wilfred, bearing St. Peter's keys, forcing the Papal sceptre on the rebellious Witan, next preaching to the South Saxons; and, last of all, St. Cuthbert, with rosary of beads that bear his name, and banner with the inscription, 'The world without woman.' They entered into the priory, and the air was full of a strange celestial harmony.

Again, I saw them gathered in groups on the shore, and lo! the sea was crowded with ships manned by strange warriors, who, with battle cry of Vyking, dispersed the monks of Lindisfarne! And I awoke, to find myself lying on the grass near the priory, alone, with only the sound of the sea-gulls and

the lapping of the waves on the rocks below. I had gone out early in the morning to wander about the abbey, and musing had fallen asleep. It was a lovely scene; far away in the distance the outer and inner Farnes were clearly discernible through the slight haze, with their lighthouses, which now and then flashed as they caught the sun. Below was a reef of rocks, the Black Lawe, which are never quite covered by the sea, and being isolated are therefore the delight of the sports-man. Near to is the playground of the happy baby Seals in the breeding season. Farther away are the granite beacons on the mainland. There is a hill behind the priory from which from time immemorial the old sailors have watched with telescopes, now antiquated in pattern, the ships that pass in the day. The first one to sight a ship by time-honoured custom becomes its pilot. There was something pathetic to me in this group of grey-haired men looking for the sails, which are so few and far between, when I knew that for years past they had done so, and for years to come would do the same. They are strangely conservative, these island folk. For instance, a pro-posal to alter the road to the church was opposed by them, on the ground that they would not be carried to their last resting-place along any path except that, along which their fathers for generations had been carried. There is a certain grand simplicity about them. One Peter, a well-known character, with his guileless nature, his rugged face, his evident poverty, and his love for little children, would do well as a model, I thought, for his apostolic namesake in the twilight of his life, when his impetuous spirit had been disciplined by the fiery trials through which he had passed. Peter is related to about three-quarters of the island population, 85 or so of whom bear his name. One day he described to me a most beautiful sponge he had got deep-sea fishing, about 2 feet high, with spires like a cathedral, which he had bartered to a bootmaker for a pair of sea-boots. For 20 years that sponge has stood under a glass case in the house of the bootmaker, and Peter during that period has been measured several times, at intervals, for those boots. He is waiting for them still, with the same patience as his fellows with their glasses on the hill-top. They are shrewd, too, in their way. They spend their Sabbath mornings 'gazing,' as on week days, despite the bell calling them to worship God in the little ancient church near the priory. A Presbyterian divine, who was of opinion that the vicar was not doing his duty towards these fisher folk, determined to go to them if they

would not come to him. So he climbed the hill on one side, whilst they, forewarned by their sentries on the hill-top, quietly walked down the other. Since then they have been left undisturbed in their eerie.

As the tide was ebbing I crossed over the wet stones to St. Cuthbert's Isle. It is very small, only a few rocks with plants scattered here and there, and the remains of an ordinary nineteenth-century building. I secured some plants of what is called locally Lavender, by aid of a knife, from a crevice in the rocks, and some plants of the *Cochlearia officinalis*, though neither were in flower at the time. I next visited the mussel gardens, which are dotted over the shore. The mussels, having come from deep beds originally, I found to my delight some fine specimens of *Sertularida* adhering to their shells. It is rather serious, I think, this gradual extinction on our English coasts of the mussels, which form one of the chief baits of the fishermen. Mussels seem to love a quiet, undisturbed life, and the rush of our modern civilisation is fatal to them. I wandered to the cliffs; they are mostly shale and easily crumble away, and the shore is strewn with red bomb-like stones and St. Anne's marble, which looks as if groups of worms coming out of their holes had suddenly been changed into stone. I looked for the fossil Encrinites which St. Cuthbert fashions in the bowels of the earth, according to the legend, but which matter-of-fact people say are the fossil stalks of the 'stone lilies' or 'feather stars' which lived thousands of years ago in the ocean forests. My search, except for a nest of beetles, which had crept into the rock for shelter, was profitless, so I tried the shore. The search for St. Cuthbert's beads is by no means a sinecure. Nothing but the hope of 'breaking the record' in the matter of 'treasure trove' could have kept me for two hours lying face downwards on the shore, turning over the stones and looking in the little pools. Sometimes I knelt on an inviting stone and it gave way, and I was precipitated into the water left by the receding tide. So by the time I had secured a few Encrinites, and several small fossil shells, and some fossils which I did not know, perhaps the base of the 'stone lily,' I was very wet; and I ate my lunch on a rock and felt it was not quite such a beautiful day as I had thought. However, if I wished to get to Emmanuel Point before the tide turned I would have to be moving. The cliffs, as I walked, were covered with a beautiful white bladder campion. Peter was on the beach, tidying up his boat, and

he asked me if I would not like to go out in his boat for a short time. The water certainly did look inviting, and I much wished to go over to the Beacons on the mainland, so I consented and we set out. The boat leaked a good deal, so I was thankful when we arrived at the other side, for I remembered that a coastguardsman had been drowned one night owing, it was supposed, to the entire absence, or partial removal, of the cork, which usually plugged the bilge-water hole in the bottom of the boat.

Near the Beacons is an oyster fishery, not nearly so profitable now as in past years. The sand round the Beacons is strewn with beautiful shells, razor, cockle, etc., and oyster shells tinged with hues of purple, yellow, and green. I got two or three dozen oval and delicate bivalve shells. The backs were streaked with gradations of colour, from pale yellow to brilliant orange, from brown to red, or with more sombre shades of blue-grey and heliotrope. I call them 'sunset' shells, in default of a better name, as with a dextrous touch of the brush, a splendid chaos can be changed into a peaceful sea, behind which the sun is sinking to rest, as it often did in those September days, in a glorious robe of orange and purple. The Gaper shell, the Trough, the small Cowry or 'Nanny Nun,' the little top or 'silver bell' of the nursery rhyme, and delicate shells of all shapes, colours, and sizes, were profusely scattered around. The fisher folk make these tiny coloured shells into flowers and leaves, together with the two small cranial bones of fish, which are finally grouped into wondrous erections under glass cases. Among the sea coal were numbers of little white heart urchins ranging from ⅛ to ¼ of an inch, which a little maid of six summers told me were 'skaties,' a term which was explained to me afterwards, when I saw a large specimen in a private collection carefully labelled 'a skate's egg.' With my umbrella filled with shells, I returned to the boat and Peter having put up a sail, we were soon blown over to the island. Peter promised to convey my umbrella with its precious contents to the inn, so I was free to continue my ramble. I passed the castle, most happily situated on a hill, from which a complete view of the island is obtained. There is nothing to be seen in the castle itself, beyond a few old guns and now disused magazine rooms. At the foot of the hill are a number of lime-kilns used now as cattle sheds. They would be safer for visitors if they were enclosed by a high

wall. At present anyone who wishes can fall down them without the smallest difficulty--a dark night would be quite sufficient! I found some fine specimens of the *Hyoscyamus niger*, the plant over 3 feet high, and the flower spikes 15 inches long. Stem, branches and capsules, bleached white. I found two specimens of the Pipe Fish, evidently thrown out from some boats. They reminded me of the dear little sea-horses of which I am so fond! Among the rocks near Emmanuel Point my real search began. I chose out a small pool with several moderate-sized stones, and proceeded to lift them up, one by one, and to carefully replace them the same side as before. For why should we collectors leave ruin and devastation behind us in the quiet ocean homes? What a wealth of animal life was beneath these stones! Beautiful marbled Chitons, which by the time I reached home had rolled themselves into light little balls, were fastened to the rocks. Errant Annelides, such as the *Eunice*, with their prismatic hues, slowly crawled on the sand. To my delight I found two fluffy bluey-white things, covered with mud, which after careful washing turned out to be the long-sought-for sea-mice. Beautiful Aphrodite, with your little hair prisms and rainbow hues! O that I could have preserved you in spirit, but alas! the island possessed none. Under a stone, with periwinkles, anemones, and limpets, which only a sharp blow could dislodge, I found the *Cirrhatulus* which I thought was a mass of small red worms till I had taken it from its rocky home. A group of little jelly hillocks threw small jets of water into my face. Wicked little sea squirts! A curious pale yellow animal was crawling on a piece of sea-weed. What could it be? Four legs on each side joined together in the middle, to all appearance minus a body. I found he was a mite with a name double his size, *Pycnogonum littorale*. Walking away as fast as their arms could carry them, were some little brittle Star Fish. I took them very carefully between my tweezers by their central discs, for had I not once spoilt some perfect specimens by touching their arms, which in revenge they cast off? What beautiful, geometrical patterns there are traced on these discs! I do not think I have ever found one to correspond exactly with another. Attached to some small stones were tiny forests of *Sertularida* and *Campanularida*, which I carried home, as they were, for future examination.

Past Emmanuel Point and its glistening white beacon,

there stretches a reef of rocks out into the sea. These I proceeded to examine. I climbed down the rocks into a small natural harbour. Underneath the long trails of sea-weed I found several sorts of sponges. One, forming a yellow crust on the rocks, with small quiescent volcanic cones dotted all over; another, a white one, hanging down from the rocks, with one large hole at the bottom; and another clinging, sac-like, to the sea-weed. These are calcareous sponges, with two differently-shaped spicules—one, triradiate, the other, like a small-headed nail—which are easily seen under the microscope. Groups of little Periwinkle eggs stood in the crevices of the rocks, the holes at the top showing where the animals had escaped. I found, lying on the sand, a ball of these eggs, all their bases attached together and the cups standing out all round like Porcupine's quills. Like lightning a little Eel darted past, and hid under a stone! Should I give chase? Why not? So from stone to stone I followed him, till he lay gasping on the sand, and lo! he was a Gunnel after all! Splashes of what looked like white paint on the *Fucus* next attracted my attention. After examination I decided it was a species of Sea-Mat, probably *Lepralia*. On a stone, I found a mass of brown jelly, embedded in which were starry red flowers quite large to the naked eye. I took it home and found it was too opaque for microscopic examination, and it soon dried up, and I never came across any more, so I did not find out what it was.

Sea Lemons, the *Doris jonstoni*, there were in plenty, some quite yellow, others yellow with blotches of purple or red. They were attached firmly to the rock with their gills retracted. When in the bottle they crawled about with their feathery coronets fully extended. At the bottom of a pool a brilliant splash of red attracted my eye, what was it? Fairy-land was opened to me! Below was a 2 feet deep pool in the rocks. Two red Sun Starfish lay at the bottom, a yellow Sea-Urchin clung to one side, a purple one at the other. Coral sea-weed, green sea-weeds like fine grass or narrow crimped ribbon, and crimson sea-weeds covered with the little *Spirorbis*, grew all over the rocks and tufted the stones. I gave a gasp of delight. How beautiful it all was! The restless sea even to all appearance had sunk to sleep, and the air was filled with the strange peace which characterizes the interval between the ebb and flow of the tide. Beyond the farthest rocks a dark head rose, and then another, and another. What could they be but

Seals, perhaps coming to the very place where I was, the only inlet of any size among the rocks? I waited patiently as long as I could, but they did not come any nearer—scented danger, perhaps, as I descried a shooter behind a rock ahead. A movement among the tufts of *Laminaria* just beyond the rocks, warned me to retrace my steps, as the tides are very treacherous on these shores. Wandering onwards, I came to the long stretch of sands of the Salmon Fisheries, passing on my way a small bay, from the soft rocks of which, at low tide, in winter, large Encrinites can be taken. In the summer and autumn the thick growth of sea-weed obscures them. I found a piece of rock with numerous small Encrinites embedded in it.

There are few shells to be found on these sands, only many-banded snail shells among the sandhills. But I was well rewarded by the birds. Flocks of gulls were flying about the sea, now darting above the waves, now walking with a curious bobbing motion on the shore. The wailing cry of the Curlew made me feel lonely for the first time that day. Flocks of Stints rose up from the sand, and whirled away in little streaks of silver to settle farther on. How glad I was no shooters were there to mar the quiet beauty of the scene! But lo! a puff of smoke and a flash from behind a rock, and a beautiful Eider Duck lay dead on the sand; and two or three with their wings shattered were swimming out to sea as fast as they could. Flocks of the Teal, Wigeon, and Knot flew over my head and away across the sea. They had but lately arrived on our shores, I suppose, for their annual visit. They receive a warmer welcome in Holy Island, at any rate, on their arrival than they probably expect. For they are blazed at all round the island, from behind rocks and from boats. Some sportsmen (?) have boat guns of large dimensions, which deal out deadly destruction among the poor birds, leaving their dead bodies floating on the sea, not half of which are ever recovered.

The Teal, Wigeon, and Knot are capital eating. But few people care to tackle Stints, Eider Ducks, or Solan Geese, though they can be rendered eatable by filling them with chopped onions over-night, I was told. I have not tried the recipe, so cannot recommend it as infallible. The Solan Goose I was given by one of the shooters was a splendid bird, and I secured a capital skin and wings. How curious the quills look pushing their way through the skin at the back! I found an Angler Fish dead on the shore. Peter, the fisherman, called it an Angel Fish, but some people, he said, called it the 'Devil

Fish,' and he drew my attention to its 'hands,' the pectoral fins with which it walks. I was much struck with the numerous sharp little teeth at either side of its throat aperture, and also with the marvellous ring and staple arrangement of its spines. I dissected it afterwards with great interest, whilst its little heart was convulsively beating, having cut an artery in the process. It occurred to me that possibly the heart in a drowned man might be started beating by the severance of an artery, provided, of course, coagulation of the blood had not taken place.

The liver and the heart were covered with patches of a sort of yellow granulation, which cut like an unripe stone pear. Was this a sort of fish tuberculosis? And was it the cause of its death? Hanging to the walls of the jaw-pouches were numerous yellow things, difficult to describe, about ¼ to ½ an inch long, with no visible structure, and highly contracted, like drawn-up elastic. They were too opaque for my microscope, and having no sharp razor nor methylated spirits, I could keep no specimen, much to my disappointment. However, I secured a good skeleton of the fish. I believe that they were some species of parasite, embedded probably in the skin by powerful hooks, as I found it impossible to detach them without cutting. They may have belonged to one of the well-known forms of parasitic life, or perhaps they were an unknown species, for I believe that the diseases and parasites of fish are far from having been as yet thoroughly investigated. I returned, exulting, to the little inn, and, after reducing the 'Angler' to a skeleton, as I have described, I mounted some specimens of the Sertularida and the Campanularida, and of the sponges. And this was far more delightful than even the ramble itself. I counted fourteen Sertularian polypites fully extended at one time on a slide. They were most amusing as they jumped about and suddenly contracted into their cups. Some of the empty campanularian cups were transformed into elegant vases, by bright yellow diatoms, which were attached to them in a sort of stalactite arrangement. The central 'stalk' was ornamented by fans of yellow diatoms at intervals. What looked like a bush of tiny little Vorticella attached to a 'stalk' of a Sertularian were particularly lively. I introduced Peter, the fisherman, for the first time in his life, to his great astonishment and delight, to this world of microscopic life. And thus was brought to a close a long interesting ramble in one of the smallest and one of the most interesting, historically speaking, of the islands of Her Majesty's Empire.

Naturalist.

NOTE—ORNITHOLOGY.

Birds at the Northumberland Lakes and Neighbourhood.—At Whitsuntide my two sons and I took a run by train to the little village of Bardon Mill, situated on the banks of the South Tyne, and here we spent a short but very pleasant holiday. This is the best station from which a ramble to the Northumberland Lakes and also along the Roman Wall near can be obtained. The three small lakes—Crag-lough, Greenlee, and Broomlee—all lie to the north of the Roman Wall. The nearest, Crag-lough, is close under part of the wall which runs along the crag above, and anyone visiting here should keep on the summit, as it is very difficult to climb up from below. From the Roman Wall a very wide and expansive view is to be obtained, and one which is perfectly charming. To the north bleak moors and fells stretch far away to the Cheviots. On the west the Pentland Hills loom in the distance through a blue haze, and to the south and east there is a broad-stretching and well-wooded valley with hills beyond. Another beautiful walk within easy distance—it is about ten miles there and back—is to Staward Peele, an ancient Peele tower now in ruins. Here the banks of the Allan-Water rise high up, clothed with tier upon tier of firs and larches, at this time of the year all in their first tints of vivid green, and the whole prospect is lovely in the extreme. The district is very rich in bird life, as the following list, which were those we came across, will show :—

Kestrel.
Sparrowhawk.
Black-headed Gull.
Lesser Black-backed Gull.
Curlew.
Snipe.
Wild Duck.
Coot.
Redshank.
Grouse (with young).
Partridge.
Corncrake.
Golden Plover.
Green Plover.
Dipper.
Rook.
Jackdaw.
Starling.
Cuckoo.
Wheatear.
Flycatcher.
Whitethroat.
Willow Warbler.
Thrush.
Blackbird.
Robin.
Chiff-chaff.
Yellow Hammer.
Chaffinch.
Wren.
Pied Wagtail.
Lark.
Titlark.
Swift.
Swallow.
Sand-Martin.
Hedge Accentor.

—H. T. ARCHER, Newcastle-upon-Tyne, 13th June, 1898.

NOTE—BOTANY.

Aliens on the Fossdyke, near Lincoln.—I was lucky enough to get an hour and a half on the Fossdyke bank beyond Braford water, to spell the name of the spot in its ancient and correct manner, in Div. 13, on Friday, the 17th June. My brother-worker at the Flora of Lincolnshire, Mr. J. S. Sneath, of 32, Tentercroft Street, Lincoln, was there too. He always keeps his eyes open for aliens on this spot. We took the following, all aliens where we found them :—*Phleum arenarium*, *Vicia pseudo-cracca*, *Trifolium resupinatum*, *Caucalis daucoides*, *Raphanus raphanistrum*, *Brassica muralis*, *Melilotus parviflora*, *Centaurea calcitrapa*, *Lepidium campestre*, *Silene inflata*, *Leontodon autumnalis*, just coming into flower, *Chrysanthemum segetum*, *Trigonella fœnum-græcum*, *Vicia narbonensis*, *Myosotis cæspitosa* from the delph just by, but taken by us high above the water-line along with *M. arvensis*, but not the British form, too woody in growth, and finally the lovely Labiate, *Wiedemannia erythrotracha*.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 18th June 1898.

NOTE—MAMMALIA.

Badger in Lincolnshire and Nottinghamshire.—A Badger (*Meles taxus* Bodd.) killed at Mavis Enderby (Div. 10) on 8th June was secured in the flesh by my friend Prof. J. F. Blake, who kindly forwarded it to me for the museum here. The specimen was a small male.

An adult male was chased and killed by a pack of foxhounds at Thurgarton, Notts., on 17th January this year; and another was taken alive at Thrumpton on 9th March last.

I am informed that no fewer than five Badgers were killed at Bunny, near Nottingham, in the late autumn of 1897, but I have not been able to ascertain any further particulars.—J. W. Carr, University College, Nottingham, 25th June 1898.

NOTE—MOSSES AND HEPATICS.

New and Rare West Yorkshire Mosses and Hepatics.—In a wet clay field bordering on Killinghall Moor, near Harrogate, I have recently gathered two mosses which have not hitherto been recorded for the West Riding. They are *Mollia rutilans* Lindb. (= *Weissia mucronata* B.&S.) and *Funaria obtusa* Lindb. (= *Entosthodon ericetorum* mult. auct.). The *Mollia* occurred in large patches, which were rendered very conspicuous by the abundance of the rich brown capsules. In the same field grew the tiny Hepatic *Fossombroma pusilla* L., Dum., with fruit. For this I observe that Lees gives only two localities, describing it as '**very rare.**' The Pateley district has afforded me two rare Hepatics, viz., *Diplophyllum minutum* Dicks., Dum., from Guy's Cliff, and *Liochlæna lanceolata* L., Nees, from Wath Waterfall. Of the last Mr. M. B. Slater writes:—'It is a very rare plant, turning up sporadically here and there. I only gathered it once, near the Esk bank in Arncliffe Wood, where it was first gathered by Spruce so long ago as 1842. It is rare now in that locality.' The plant is inconspicuous, and I might possibly have passed by it but for the presence of its characteristic arcuate perianths.—Llewellyn Jameson Cocks, Godolphin House, Harrogate, 21st June 1898.

NOTE—SPONGES.

Freshwater Sponges in Yorkshire.—In the spring of this year I obtained specimens of a sponge attached to sticks in the Oak Beck, Harrogate, which I have submitted to Mr. B. W. Priest, of the Quekett Microscopical Club—one of the few workers at this order—and he pronounces it to be *Spongilla lacustris*. It is distinguished by the spicules of its statoblasts being arcuate and spinose, while those of *Meyenia* (*Spongilla*) *fluviatilis*, our only other British freshwater sponge, are bi-rotulate. Mr. W. Denison Roebuck tells me that in his bibliographical researches he has so far only come across two references to the occurrence of freshwater sponges in Yorkshire. The first is in a paper on *Alcyonella stagnorum*, by Mr. T. Pridgin Teale, read before the Philosophical and Literary Society of Leeds, in November 1835 (Transactions, vol. I., pt. I., page 22) in which *Alcyonellæ* are mentioned as having been found by him in a pond at the racecourse in Haigh Park, near Leeds, accompanying '*Spongilla friabilis*' and encrusting dead twigs. Probably *Meyenia fluviatilis* is the species here referred to, as *Spongilla friabilis* (now called *Meyenia carteri*) is not a British species. The other record is by the Rev. J. Stanley Tute in a paper on the microscopic fauna and flora of Markington (Naturalist, May 1890, p. 152), where *Spongilla fluviatilis* is stated to be abundant in the stream near the Rectory, Ripley. The absence of records, however, does not afford ground for supposing that these sponges –both of which are very common in the Thames and other southern waters—are rare in our county, and it would be very desirable to have any observations of their occurrence communicated to the Naturalist, with a view to ascertaining their distribution in the northern counties of England.—Llewellyn Jameson Cocks, Godolphin House, Harrogate, 25th June 1898.

NEOLITHIC LIFE IN LINCOLNSHIRE.

JOHN H. COOKE, F.G.S., F.L.S., etc.,

Edleston, Worcester; Vice-President of the Lincolnshire Science Society.

THIRD PAPER.

For previous papers see 'The Naturalist,' March 1898, pp. 77-79, and May 1898, pp. 145-148.

THE question of the age of the prehistoric boat found at Brigg has led to much discussion. Mr. Atkinson has already treated this part of the subject so exhaustively that I do not propose to do more than briefly outline the objections that a geologist would raise to its alleged post-Roman origin. Relics of human industry such as these derive their value as time indices from the geologic horizon at which they are found. The geological evidences in this case are quite opposed to either a Roman or a post-Roman origin. The beds that were exposed in the excavation in which the boat was discovered exhibited in section the following sequence :—

A. Surface soil.
B. Peat and forest bed.
C. Brown alluvial clay.
D. Dark bluish-grey alluvial clay.
E. Peat and forest bed.
F. Glacial beds.

Bed B marks the horizon at which Roman remains, as a rule, occur in this neighbourhood; the Brigg boat was found lying on bed E. The alluvial clays C and D, with their sedges and marine forms of Diatomaceæ, indicate a time when the Ancholme Valley probably formed a shallow arm of the Humber, and it was possibly for the purpose of navigating the lagoons of the Carrs that the boat was fashioned.

The presence of forest beds below and above the clays points to the occurrence of heavy floodings of the Ancholme Valley—floodings which converted the whole of the Carrs into a morass, and which remained long enough to destroy the lower forest and to bury it beneath the alluvium of the mud-laden waters. The size of the trees that grew in the lower forest, the thickness of the forest bed, the stratigraphical characteristics of the overlying clays, and lastly the formation of the upper peat and forest beds, in both of which remains of undoubted Roman origin have been discovered, all serve to demonstrate how great an interval of time must have elapsed between the fashioning of the Brigg boat and the coming of Julius Cæsar.

July 1898.

The Washingborough boat was also a 'dugout,' but, from the description that was given to me of it, it was but a small specimen. Its value was not appreciated by those into whose hands it fell: it has now disappeared. The Witham and its banks are rich in these old-world remains, and it is to be hoped that when, in the future, anything of this description be again brought to the light of day, it will be treasured until such time as the County Museum Committee shall be in a position to afford it protection.

Such relics as these afford opportunities for speculating on the occupations of these old Lincolnshire folk. We can picture them hunting the Red-deer that then swarmed in the north of the county, and contesting for the smaller game and for the fruits of the forests with the Wolf and the Wild Boar. On the meres and lakes of the marsh, carr, and fenland they plied their nets; and with the assistance of these rude canoes they probably fished the deeper parts with their grass lines and primitive flint hooks. Fragments of the nets that they used, and specimens of the sinkers that were attached to the nets have been found in various parts of Britain. A fine specimen of the latter was obtained from the bed of the Witham, near Washingborough, a few years ago. In shape it is somewhat rhomboidal, measuring 6 inches in length, 2⅞ inches wide at the bottom end, 2 inches wide at the top end, and having an average thickness throughout of ¾ inch. Within an inch of the extremity of the top a hole has been bored which in section exhibits an hour-glass form. It is a well-worked and smoothly-finished perforation, and has evidently been made by boring alternately on either side of the slab. One of the flat sides is covered with groups of groovings and striæ that form cross-hatchings, but the opposite side has no artificial markings. The only explanation that I can offer as to the origin of the markings is that they have been produced by the iron keels of modern barges as the specimen lay on the bed of the Witham.

Relics like the preceding are such as are not likely to be readily destroyed, and, therefore, notwithstanding the comparatively great period of time that has elapsed since they were first fashioned, they are but little changed in nature or appearance. Most of the more fragile and perishable articles that were used by these old-time folk in their every-day life have long since disappeared; but here and there an occasional specimen in bone or wood has been preserved. Mr. Atkinson has several in his collection, and the Rev. J. Parker, of Barrow-

on-Haven, has in his possession a lance- or arrow-shaft which was found in 1887 in Turner's brickyard. The shaft is symmetrically fashioned, gradually tapering from the centre, where its circumference is 3¼ inches towards the butt end, where its girth is 2 inches. It measures 4 feet 7¾ inches in length; and when found it lay in a horizontal position with its point towards the Humber at a depth of 10 feet from the surface and 52 feet from the Humber bank. Whether this relic may be attributed to so remote a period as that of the stone implements is, perhaps, open to question; but the fact that it is doubtful has decided me to make mention of it.

Of Neolithic pottery considerable quantities have been forthcoming from all parts of the county. Mr. Skertchley, in his 'Geology of the Fenland,' describes an urn which he obtained from the gravel near Bourn. It was made of very ill-worked boulder clay, the fragments of chalk being plainly visible, and was adorned with quasi-straight lines crossing each other. Besides this he mentions several others that the workmen destroyed, and which, when found, usually crumbled on being touched. Besides these I have obtained many fragments from Brumby, Tealby, and Friskney. The Tealby specimens have been made of Kimeridge Clay, a formation which predominates in that neighbourhood; and they are rudely fashioned, roughly baked or burnt, and exhibit no traces of the action of a potter's wheel. The Brumby specimens are still coarser, and as they are always in small fragments, it is not possible even to conjecture as to the size or design of the original utensil.

Canon Greenwell, who has given much attention to the barrows and tumuli of North Britain, suggests that most of the Neolithic pottery is funereal or has been associated with burial rites. In connection with this opinion it is interesting to note that the urn that was found by Mr. Skertchley, and which he considers to be Neolithic, contained burnt bones. Other valuable evidences of the funereal ritual of the later phase of the Neolithic Stone Age in Lincolnshire have been forthcoming from Grimsby. In the course of some structural alterations at the Central Market National Schools a well-preserved specimen of a Neolithic wooden cyst was discovered. When found it was about 3 feet in length, but exposure to the air has rendered it very friable. It is now in several pieces, and is preserved in the school museum. It is a rude 'dugout,' and it had been roughly hewn out of a portion of a trunk of an oak tree with similar implements and in a similar manner to that

employed in making the prehistoric boats. It had evidently been used for the same purpose as the Bourn urn. A second cyst was discovered about ten feet below the foundations of the Grimsby Parish Church. Of a somewhat later date, but still of a period of great remoteness, if measured in years, are the cysts that were found near Grimsby Town Station. Three primitive oak coffins were discovered at a depth of about 5 feet from the surface, averaging 4 feet 3 inches in length, and exhibiting workmanship of a very rude and primitive description. One had a cover which had been riven or split from a tree trunk and roughly shaped to fit.

Archæological research has shown that among the long-barrow men of the south of England the practice of burial was almost universal: but that in the north most of the dead of the period were cremated. The former mode of disposing of the dead was a characteristic of the earlier Neolithic or Basque period; in the succeeding or later Neolithic Age, when the round head Celts predominated, cremation was introduced, and the two methods were practised contemporaneously. In Lincolnshire we have evidences of both practices. Mr. Skertchley's find establishes the first: of the second there are proofs in the hundreds of tumuli that are scattered over the county. The tumulus is a characteristic of the Neolithic period. As a rule it consists of chambers built up of boulders or other rough stones which were approached by long galleries open to the outside, in which oftentimes a whole clan was buried. In Western Europe these burial places have many names according to variations in their structure, such as dolmens, menhirs, cromlechs and alignments.

Stone was not always to be had, and in such cases the bodies were laid in the ground in a 'knees to chin' attitude, and the earth was heaped up in mound-like masses over them. It is to this class that the tumuli of Lincolnshire belong; and it is of these that I propose to treat in my next paper.

NOTE—ORNITHOLOGY.

Two Cuckoo's Eggs laid in one Nest.—On Monday, 20th June, I flushed a Meadow Pipit (*Anthus pratensis*) from her nest, which was beautifully concealed beneath a whin bush, and found that it contained two Cuckoo's and three Meadow Pipit's eggs, a fourth Pipit's egg lying a few inches from the nest. The two Cuckoo's eggs were of exactly the same size, shape, and colour, and possibly they were deposited in the nest by one bird, it being unusual to find more than one of the eggs of *Cuculus canorus* in a nest.—JOSEPH ARMITAGE, 4, Warren Lane, Barnsley, 22nd June 1898.

Naturalist.

THE YORKSHIRE COLEOPTERA COMMITTEE.

M. L. THOMPSON,
Hon. Secretary for the Yorkshire Coleoptera Committee,
Diamond Street, Saltburn-by-the-Sea.

Some years ago the Rev. W. C. Hey, M.A., commenced the work of compiling a List of Yorkshire Coleoptera, and the first instalment was published in the Transactions of the Yorkshire Naturalists' Union in 1886. Three other parts appeared in 1888, 1891, and 1896 respectively, in the last of which the concluding genera of the Brachelytra (Staphylinidæ) are dealt with. At this stage the state of Mr. Hey's health compelled him, much to our regret, to relinquish the position of sole author, and a committee has recently been formed whose chief duty shall be to prepare the continuation of the list under his direction as chairman.

On behalf of the committee I am at present engaged in collecting local record-lists for the next group to be dealt with — the Clavicornia—and arranging the several localities for the Yorkshire species, so that the members may have submitted to them for consideration and scrutiny a mass of observations presenting something like order. We purpose following the arrangement and nomenclature contained in Canon Fowler's recent and admirable work of five volumes, 'The Coleoptera of the British Islands.' The catalogue which the student will find as that in which this arrangement is most closely followed is the one compiled by Dr. Sharp and Canon Fowler in 1893, and published by Messrs. L. Reeve & Co., London.

The Clavicornia contain many beetles familiar to ordinary observation in insect-life, and as only small portions of the county have been systematically investigated by good coleopterists, I venture to direct the attention of Yorkshire entomologists to a field of research in which much good work can yet be done. I will briefly mention just some of the genera which are to make up the next part of our List. Among the first are *Agathidium*, *Anisotoma*, *Hydnobius*, and *Colon*, insects chiefly found by sweeping on sandhills and hillsides, and examining (in the case of *Agathidium*) fungoid growth, dead leaves, etc. Many of them are among the rarest of British beetles, but the Yorkshire coast should furnish some favourable situations for collecting the species of *Anisotoma* and

the allied genera. Next come *Necrophorus*, *Necrodes*, *Silpha*, *Choleva*, *Hister*, *Saprinus*—all beetles found in decaying vegetable and animal matter. The species of *Necrophorus* are the 'burying beetles' proper, being large black insects, most of them having bright orange bands across the elytra. *Silpha quadripunctata* is an exception as regards habits, being taken on oak and other trees where it feeds on various larvæ. *Trichopteryx*, *Ptilium*, and *Ptenidium* contain the most minute of Coleoptera—mere specks to look at—and met with chiefly in moss, hotbeds, and vegetable refuse. In similar habitats, as well as under bark, are to be found the species of *Scydmænus*, *Euconnus*, *Bythinus*, *Bryaxis*, and *Euplectus*, many of them affecting marshy situations. All minute insects and easily overlooked, their distribution in the county is much in need of careful study. The lady-birds are now classed with the Clavicornia. The commoner sorts are familiar, even to the outside world, but closer study reveals them divided into several genera—*Hippodamia*, *Adalia*, *Coccinella*, *Halyzia*, etc. Many of the species abound about fir trees. Further on in the group come the 'flower beetles' of the genera *Meligethes*, *Epuræa*, *Brachypterus*, *Cercus*, and *Byturus*—occurring in profusion on our flowering shrubs and plants. Allied to these are the species of *Nitidula* and *Omosita*, found in dried carcases and old bones. Whilst *Soronia*, *Ips*, *Rhizophagus*, and *Mycetophagus* contain insects whose habitat is, for the most part, under bark and in the fungoid growth on trees. By sweeping herbage we meet with the species of *Cryptophagus*, *Atomaria*, *Corticaria*, *Enicmus*, *Melanophthalma*, and *Monotoma*, many of them also inhabiting haystack and vegetable refuse. They are all small, inconspicuous insects, and require much attention at the hands of Yorkshire coleopterists. The common 'bacon beetle' is a clavicorn of the genus *Dermestes*, whilst *Byrrhus* contains round, very convex insects, with strongly retractile legs, which seem to disappear at the least alarm—hence their popular name of 'pill beetles.' At the end of the group are certain sub-aquatic beetles—*Elmis*, *Limnius*, and *Potamimus* found clinging to submerged logs and stones in streams; and the species of *Parnus* and *Heterocerus* burrowing in the banks of ponds and ditches.

Now these references are sufficient to indicate what manner of beetles the Clavicornia contains, and are given in the hope that the nature of our work may come under the notice of some entomologist in Yorkshire thinking of 'taking up' the study of Coleoptera. And also that such as may have 'worked' the

county in former years may send us the results of his labours, so that nothing of the nature of old and unpublished records may be lost.

In conclusion let me give the assurance of my willingness to render to those who may desire it such assistance as may be in my power. We want to make the List as complete as possible. The county has had its first-rate coleopterists in former days. Their names rise spontaneously to the lips of every student of Yorkshire beetles. It is now for us of the present generation to carry on the work, and see to it that the results of their labours are supplemented by a body of facts from recent observation and research somewhat commensurate with the nature and extent of our opportunities.

NOTE—COLEOPTERA.

***Orchesia micans* near Doncaster.**—Adverting to my recent note (see 'Naturalist,' April 1898, p. 116) I have now to add that I have recently succeeded in breeding this beetle in profusion from fungus brought from Wadworth, near Doncaster, and shall be glad to send living specimens to anyone desirous of the species.—E. G. Bayford, Barnsley, 14th July 1898.

NOTE—BOTANY.

Aliens, etc., in Lincolnshire.—Mr. A. Smith, of 24, Peaksfield Avenue, Grimsby, sent me *Asperula arvensis, Camelina sativa, Lepidium Draba, Diplotaxis tenuifolia, Arnoseris pusilla* from waste ground near Humber bank, Great Grimsby. One good record was that of a true native species, *Carex striata* Good., from the willows, Little Cotes. I have never taken this species, and it has not been sent in before. All in Div. 4. Mr. H. Preston sent me *Saponaria vaccaria*, from Saltersford, Grantham, Div. 15.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 9th July 1898.

BOOK NOTICE.

Bird Neighbours. An | Introductory Acquaintance | with One Hundred and Fifty | Birds commonly found in | the Gardens, Meadows, and | Woods about our Homes | By **Neltje Blanchan** | with Introduction by | John Burroughs | and fifty-two coloured plates | [ornament] | London | Sampson Low Marston & Co. | Limited | 1898 | [4to. pp. xii. + 234; price 12s. 6d.].

This book is American, adapted to the latitude of New York in particular. The striking point about it is the series of coloured plates, which appear to be directly photographed from the stuffed specimens, and the colouring of which is approximately true to nature and not exaggerated. As to the text the arrangement is on a novel principle, which appears to be by no means a bad one for enabling incipients readily to determine what they see. The birds are grouped according to their predominant tone of colour, such as birds conspicuously black, conspicuously black and white, conspicuously red of any shade, and so forth. A short table is also given, grouping the birds according to their sizes, and other chapters give notes on the habitats of birds, their seasons, their characteristics, etc. The book is handsomely got up in green cloth case.

SNAINTON BRICK-PONDS AND THEIR BEETLES.

Rev. W. C. HEY, M.A.,
Derwent House, West Ayton, York.

Near Snainton Station, on the Scarborough and Pickering Branch Line, lie two ponds. One of them is of considerable size, and was formerly, I am told, quite extensive. These ponds clearly occupy the site of an old brickfield. They have now been converted into a receptacle for the village refuse, and will in time be extinguished like too many similar pieces of water. I have paid these ponds a couple of visits this spring, and found them not uninteresting to the coleopterist. I append a list of the beetles I collected in the water and on the banks.

Bembidium biguttatum F.

Haliplus obliquus Er.

Haliplus flavicollis Sturm.

Haliplus ruficollis DeG.

Laccophilus obscurus Panz.

Hyphydrus ovatus L. This species, which is decidedly local in N.E. Yorkshire, swarmed.

Cœlambus versicolor Schall. Rather plentiful. I have not found this in any other locality in this district.

Cœlambus inæqualis F.

Cœlambus impressopunctatus Schall. One example. This is a rare insect in Yorkshire.

Deronectes assimilis Payk. About half-a-dozen examples of this somewhat local species.

Deronectes depressus Fab.

Hydroporus pictus F. In great numbers.

Gyrinus marinus Gyll.

Laccobius alutaceus Thoms. In great numbers.

Laccobius bipunctatus F. Equally abundant with the last.

Hydræna riparia Kug.

Bagous alismatis Marsh. Very abundant.

Poophagus sisymbrii F.

The pond also yielded *Limnæa stagnalis*, which is not a common shell in this district.

5th July 1898.

ON THE HEPATICÆ AND MUSCI OF WESTMORLAND.

GEORGE STABLER,
Levens, Milnthorpe, Westmorland.

EIGHTH PAPER.

For previous papers see 'The Naturalist,' Oct. 1888, pp. 313-320; May 1896, pp. 133-140; Sept. 1896, pp. 277-284; Jan. 1897, pp. 5-12; July 1897, pp. 213-220; Sept. 1897, pp. 261-268; and April 1898, pp. 117-124.

5. ***Lejeunea Mackaii*** (Hk.) Spruce. *Phragmicoma* Dum. On shaded rocks, mostly limestone. Levens Park, c.fr. (1870); Yew Barrow, Witherslack (5th Feb. 1870); Brigsteer Wood (1871). [Lowdore, Mr. Lyell, vide Hooker's Brit. Jung. (1833); Yealand, near Carnforth, Lancashire.]
6. ***Lejeunea ovata*** Tayl. *Jungermania serpyllifolia* var. *β ovata* Hk. Brit. Jung. Kentmere Park Plantation (1868); Harter Fell (1871); Nan Bield (1875); Rydal Falls (1877); Brown Ghyll, Langdale (Pearson and Stabler). [Lowdore (1868).]
7. ***Lejeunea hamatifolia*** (Hooker). Barbon Dale, in a ghyll (1885); Kentmere. [Bracken Ghyll, Dent, Yorkshire (1878); Lowdore, Mr. Lyell, vide Hooker's Brit. Jung. I have seen this plant growing in this place abundantly.]
8. ***Lejeunea serpyllifolia*** (Dicks.). Dallam Tower Park, on trees by the river Bela (1872); Whitbarrow (1871); Gray-rigg (1869); Levens Park (1869); by the river Lune near Ingmire Hall.

   VAR. ***major.*** Rayrigg Wood, Windermere (1876); Barbon (1875); Kentmere Park Plantation (1868).

   VAR. ***cavifolia.*** Windermere (1868); Kentmere (1869); Mardale; Stock Ghyll, Ambleside; Hill Bell (1871); Harter Fell.

   Professor S. O. Lindberg considered our large-leaved form of *Lejeunea* found in Levens Park as typical *Lejeunea serpyllifolia* (Dicks.). The most common form found in the ghylls among our mountains is the var. *cavifolia*. Respecting this var. Dr. Spruce remarks in lit. Dec. 1876:—'Has smaller leaves, very convex when viewed from above, especially in a dried state. The Kentmere plant has often stipules quite as obtuse as those of *Lej. Moorei*.'
9. ***Lejeunea patens*** Lindb. Nan Bield (1875); Rossett Ghyll. [Lowdore (1876), growing with *Lej. hamatifolia*].

Writing on this species Dr. Spruce says in lit. Dec. 1876: 'When you partially flatten a leaf of *L. patens*, note how the upper part diverges abruptly from the apex of the lobule—much more than it does in *Lej. serpyllifolia*; this is one of its characters, to which add the much smaller cellules and stipules.'

10. ***Lejeunea ulicina*** Taylor. Levens Park, on horn-beam, beech, oak, maple, whitethorn, and mountain ash (1869); Rydal Park (1877); Witherslack, on plum trees; Whitbarrow, on sycamore (1869); Brigsteer Wood, on holly; Stock Ghyll.

11. ***Lejeunea calcarea*** Lib. *L. echinata* Hk. Heversham Head (1871), c.fr.; Whitbarrow (1872); Ease Ghyll, Kirkby Lonsdale (1875); Kentmere; Stock Ghyll Falls (1876); Yew Barrow, Witherslack.

[***Lejeunea microscopica*** (Tayl.). Borrowdale, Cumberland (Dr. Carrington and W. H. Pearson, 1884).]

[***Lejeunea calyptrifolia*** (Hooker). 'Mr. Lyell finds it (*L. calyptrifolia*) growing intermixed with the same plant (*L. hamatifolia*) upon rocks, Lowdore.' Hooker's Brit. Jung., tab. 43 (1833). On wet rocks at Stonethwaite and Seathwaite, near Derwentwater (W. H. Pearson).]

Tribe. JUNGERMANIÆ.

Sub-tribe. *RADULEÆ.*

[***Radula voluta*** Tayl. Near Keswick, Cumberland (Carrington and Pearson, 1884); Lowdore (1891).]

12. ***Radula Lindbergii*** Gottsche. *R. commutata* Gott. In crevices of rocks and often on wet rocks. Kentmere (1868); Hill Bell (1869); Harter Fell, Mardale, ♀ (1869); Rydal Falls (1877); Red Screes (1881); Red Tarn, Helvellyn (1887); Grisedale (W. B. Waterfall, 1887); Greenburn, Grasmere (Binstead, 1886). [Borrowdale (Carrington and Pearson, 1890); Lowdore (1891).] First recorded as British in Jour. Bot., vol. ix. p. 243 (1880).

13. ***Radula aquilegia*** Tayl. On the rocks near the waterfall, Greenburn, Grasmere (Binstead, 1886). [Borrowdale (Carrington and Pearson, 1890); plentiful on boulders and rocks, Lowdore (1891), c.fr.]

14. ***Radula complanata*** (L.). On trees and rocks. Kentmere plantation (1868); Levens Park (1869); Windermere; Hill Bell; Heversham Head; Ulpha.

Sub-tribe. *PORELLEÆ.*

15. ***Porella lævigata*** (Schrad.). *Madotheca* Dum. On a wall by the roadside near Troutbeck Bridge (1869); Yew Barrow, Witherslack (1870); Black Scar, Staveley (1869); sparingly on Heversham Head; Rigmaden Park; Naddle Forest; Kentmere.

16. ***Porella platyphylla*** (L.). Levens (1868); Heversham Head, ♂ and c.fr. (1871); Brigsteer Wood, on walls, c.fr. (1869); Windermere (1877); Dallam Tower Park; Levens Park; Pooley Bridge (1886); Kirkby Stephen; Naddle Forest.

VAR. ***major*** Got. Brigsteer Wood; Whitbarrow.

VAR. ***convexula*** Gott. Whitbarrow (Jan. 1872).

Porella platyphylla is very abundant on the limestone, where *P. lævigata* is much rarer. The latter seems to prefer the slate formation of the district.

17. ***Porella dentata*** (Hartm.) Lindb. *Madotheca rivularis* N. ab E. Mardale (1869); on rocks, Staveley (1870); on inundated trunks of trees, Milnthorpe (1872); near Sedgwick (1875); Rydal Falls; Kentmere Waterfall (1872); Swindale (1871); head of Long Sleddale (Binstead, 1886).

Sub-tribe. *PTILIDIEÆ.*

18. ***Anthelia julacea*** (Lightf.). Hill Bell (1869); plentiful in spongy slopes in the upper part of Great Langdale, c.fr. (1881). [Sca Fell Pike (1875).]

19. ***Herberta adunca*** (Dicks.). *Sendtnera adunca* Dum. Among fallen rocks, Hill Bell (1868); Long Stile, Mardale (1869); near Blea Tarn, Langdale (1875); Bleak Rigg Crags, Grasmere (C. H. Binstead, 1886).

20. ***Blepharozia ciliaris*** (L,). On rocks, Barrow Field, near Kendal (1869); Grayrigg Forest (1868); Kentmere, on walls (1869); Crosthwaite Moss; Witherslack (1872); Heversham Head Wood, sparingly; near the source of river Eden (1888); Long Sleddale.

21. ***Trichocolea tomentella*** (Ehrh.). This is given for Westmorland in Hudson's Fl. Angl., ed. ii. (1778), as *Jung. ciliaris* L. Stock Ghyll, Ambleside, with young fruit 15th Aug. 1813, C. Lyell; near Force Bridge, Levens (1869); Kentmere Park Plantation (1869); Barbon Fell (1876); Barrow Field, near Kendal, ♀ (1881); Ings; Naddle Forest (1878); Mardale Green (1871).

22. ***Blepharostoma trichophyllum*** (Dill.; L.) Dum. *Jung. trichophylla* Dill. Kentmere Park Plantation, ♂ (1867); Stock Ghyll, c.fr. (1869); near Storr's, Windermere; Mardale (1871); Groove Ghyll, Barbon (1888); Kentmere, c.fr. (1869).

Sub-tribe. *TRIGONANTHEÆ.*

[***Lepidozia tumidula*** Tayl. This species has not yet been found in Westmorland, but is plentiful on its southern border on millstone grit at Clougha, near Lancaster, where I found it on 2nd July 1881; vide 'Revue Bryologique' (1881), p. 88; near Keswick, Cumberland (Carrington and Pearson, 1884).]

23. ***Lepidozia reptans*** (L.). Maize Beck (R. Spruce, 1843); Stock Ghyll (1869); Mardale (1869); Black Crag (1879); Kentmere Park Plantation (1874); Grayrigg Forest (1868). [Dent, 1872; Lowdore (Binstead, 1889).]

Dr. R. Spruce in lit. 1st Nov. 1875 writes:—'All ours (*L. reptans*) is monoicous, but Lindberg, Carrington, etc., speak of it as if they knew only a dioicous plant. See Lindberg's Hepaticæ in "Hibernia," where he speaks of finding ♂ plant at O'Sullivan's Cascade, the sterile plant (♀?) in other places.' This evidently refers to the next species, *Lepidozia Pearsoni* Spruce, Journ. Bot., 1881.

[***Lepidozia Pearsoni*** Spruce. Borrowdale, near Seatoller, Cumberland, in great abundance (W. H. Pearson, 1893).]

24. ***Lepidozia multiflora*** (Huds. Linn.). *Lepid. setacea* (Neb.). Foulshaw Moss, ♂ (1877); Levens Moss, ♂ and c.fr. (1869); Ulpha Moss; Brunt Knot, near Staveley.

25. ***Bazzania trilobata*** (Buddle, L.). *Mastigobryum.* Black Crag, by the stream (1869); Nan Bield (1869); Naddle Forest (1869); Stock Ghyll (1876); on banks of river Lune near Sedbergh (1882); Barrow Field; Merke Side, Swindale (1887); Rayrigg Wood, Windermere (1876); Little Langdale; Cock Hag, Underbarrow. On a Black Crag specimen I found a branched flagella and a flagella bearing two ♂ catkins.

26. ***Bazzania triangularis*** (Schleich.) Lindb. On rocks, Naddle Forest (1869); Rydal Falls (1877); Harter Fell (1877); Brown Ghyll, Langdale (Pearson and Stabler, 1881); Bleak Rigg Crags, Grasmere (Binstead, 1886); Little Langdale (1875). [On wet rocks, Bracken Ghyll, Dent, Yorkshire (1872).]

27. ***Kantia trichomanis*** L. *Calypogeia* Rudd. Levens Park, c.fr. (1869); with propagula on banks, Milnthorpe (1869); Stock Ghyll, Ambleside; Naddle Forest (1878); in a ditch, Witherslack (1875); Staveley; Rayrigg Wood, Windermere, c. marsupia; Langdale; Brigsteer Wood.
28. ***Kantia arguta*** (Mont.). Barrow Field, near Kendal (1874); Staveley (1874). [On the banks of the Rawthey, between Sedbergh and the river Lune, Yorkshire (1879); Sca Fell Pike (1874).]
29. ***Cephalozia catenulata*** (Hueb.). Levens Park.
30. ***Cephalozia lunulæfolia*** Dum. Naddle Forest, 12th May 1882.

    Var. ***elata*** Spruce. '♂ flowers often in little globose heads at the apex of the branches.' Spruce in litt. In Dr. Spruce's monograph on *Cephalozia* this is under the name *Ceph. multiflora* Spruce. From specimens afterwards received by Dr. Spruce from Dumortier's herbarium in Brussels it proved to be identical with Dumortier's *Ceph. lunulæfolia*. The var. *elata* is fairly abundant on Foulshaw Moss (1869 and 1872) in very spongy places.
31. ***Cephalozia bicuspidata*** (Mich. L.) Dum. Nan Bield (1869); on decaying wood, Heversham Head (1873); on old rails, Levens Park (1875); Foulshaw Moss (1868); Mardale (1869); Brunt Knot (1870).

    Var. ***setulosa*** Spruce. Mardale (1869) vide 'On *Cephalozia*,' R. Spruce, p. 42.
32. ***Cephalozia Lammersiana*** (Huebn.). *Ceph. uliginosa* Nees. Maize Beck (Dr. R. Spruce, 1843); Stock Ghyll, Ambleside (1869); Kentmere (1869), in bogs; Foulshaw Moss; Grisedale (Slater and Stabler, 1881); Brown Ghyll, Langdale, and Bow Fell, ♂ (1881).
33. ***Cephalozia connivens*** (Dicks.). C.fr. Foulshaw Moss, 2nd March 1872.
34. ***Cephalozia curvifolia*** (Dicks.). *Nowellia* Mitt. Plentiful and fruiting on decaying wood in Naddle Forest, Mardale (1869).
35. ***Cephalozia fluitans*** (Nees.). *C. obtusiloba* Lindberg. Abundant in very spongy bogs on Foulshaw Moss, ♂, and fr. (1875).
36. ***Cephalozia sphagni*** (Dicks.) *Odontoschisma* Dum.; *Sphagnœcetis* Nees. Levens Moss (1869); Foulshaw

Moss, ♂ and fr. (1876); Crosthwaite Moss, ♂; Rayrigg Wood, Windermere (1876); Barrow Field, Kendal, ♂ (1875).

VAR. ***Stableri*** Spruce. Foulshaw Moss. 'Foliis crassis insigniter opacis, saepe retusis emarginatisve: foliolis semper præsentibus, haud raro profunde bifidis, segmentis subulatis setaceisve.' Dr. Spruce in litt., 1st July 1876.

37. ***Cephalozia denudata*** (Nees). Foulshaw Moss (1872). I have some misgivings as to this being the true plant. Possibly it may be a small starved gemmiparous state of *Ceph. sphagni.*

38. ***Cephalozia divaricata*** (Sm.). Foulshaw Moss (1872); on walls, creeping over mosses, Staveley (1869), and on walls near Haweswater, Mardale (1869); Hill Bell (1871). From these habitats the plants are usually dark coloured, greatly resembling *Ceph. grimsulana.* Those from the following places are usually very green:—Barrow Field (1874); Whitbarrow (1893); Arnside Knot (1893); Witherslack (1874); Levens Park (1876); Sizergh Fell.

VAR. *β** ***stellulifera*** (= *J. stellulifera* Tayl. MSS., Syn. Hep., 134). On dead trees, Rigmaden Park (Peter Dresen, 1873).

39. ***Cephalozia Jackii*** Limp. Whitbarrow, 15th February 1873.

[***Adelanthus decipiens*** (Hook.). Borrowdale, Cumberland (Dr. Carrington and W. H. Pearson, 1884).]

40. ***Hygrobiella laxifolia*** (Hook.) Spruce. *Cephalozia* Syn. Hep. On rocks in the river above Kentmere village (1875); Nan Bield, c.fr. (1882); Stock Ghyll, Merke Side, and Naddle Forest (1887). [Borrowdale, Cumberland (Carrington and Pearson, 1890).]

41. ***Hygrobiella myriocarpa*** (Carr.). Langdale, c.per.; on rocks, Nan Bield (11th May 1872). [Borrowdale, Cumberland (Carrington and Pearson, 1890).]

Sub-tribe. *SCAPANIOIDEÆ.*

42. ***Scapania compacta*** Lindenb. On rocks, Witherslack, ♀ and ♂ (1874); in the wood near Staveley Church (1870); Rayrigg Wood, Windermere (1876); Oxenden, Great Langdale, c.fr. (1881).

43. ***Scapania Bartlingii*** (Nees). On rocks by river Lune, near Sedbergh (1882).

44. ***Scapania resupinata*** (Dum.). *S. gracilis* (Dill.) Lindb. 'In comitatu Westmorlandico,' Huds. Fl. Angl. (1778); Little Langdale (1875); abundant on rocks and rocks near Staveley and Burneside (1877); Kettle Crags, Langdale (Binstead, 1885); Long Sleddale (1888).

45. ***Scapania æquiloba*** (Schwaegr.). Fairly abundant among limestone rocks. Heversham Head (1869); Yew Barrow, c.per. (1870); Whitbarrow (1872); bearing gemmæ.

46. ***Scapania aspersa*** Müll.&Bern. Yew Barrow, Witherslack (November 1869). This species is very closely related to *S. æquiloba* (Schw.).

47. ***Scapania nemorosa*** L. 'In sylvis et umbrosis udis in comitatu Westmorlandico,' Huds. Fl. Ang. Ed. I. (1762), p. 433; Stock Ghyll (1869); Staveley (1872); Kentmere Plantation.

VAR. ***dentata.*** Naddle Forest (Slater and Stabler (1878).

48. ***Scapania purpurea*** (Dill.) Car. *S. purpurascens* (Hook.). On wet slopes and rocks among the mountains. Grisedale (Slater and Stabler, 1878); Langdale (Pearson and Stabler, 1881); Long Sleddale (1888). [Sca Fell Pike, 1872.]

[***Scapania ornithopodoides*** (With.). *Scapania planifolia* (Hook.). Glaramara, Cumberland (Carrington and Pearson, 1890).]

49. ***Scapania undulata*** (Dill.). Maize Beck (Dr. Spruce, 1843); in rivulet, Maldon Fell (J. G. Baker, 1851); Kentmere (1869); Oxenden, Langdale (1875); Harter Fell; Naddle Forest; Bow Fell; Hill Bell; Greenburn, Grasmere (Binstead, 1886).

VAR. ***laxa*** N. ab E. Nan Bield (1882).

VAR. ***isoloba*** N. ab E. Nan Bield (1882).

VAR. ***purpurea*** N. ab E. Nan Bield (1869).

50. ***Scapania irrigua*** (Nees.). Foulshaw Moss (Barnes and Stabler, 1881).

51. ***Scapania curta*** Mart.). By the highway side, Staveley (1872).

52. ***Scapania convexa*** (Scop.). *Scap. umbrosa* (Schrad.). On decaying trees, Naddle Forest, Mardale (1870, and 24th Sept. 1887).

53. ***Diplophyllum albicans*** (L.). Abundant; but not so on the limestone. Kentmere (1868); Black Crag (1869); Stock Ghyll, c.fr.; Windermere; Staveley; Rydal; Hill Bell; Merke Side, Swindale; Mallerstang.

54. ***Diplophyllum ovatum*** (Dicks.). *J. Dicksoni* (Hook.). Growing with *J. Orcadensis* in Mardale (1869); on a wall, Staveley (1874); Little Langdale (1875). I have only found this species in the above places in Westmorland.

Sub-tribe. *EPIGONIANTHEÆ.*

55. ***Lophocolea bidentata*** (L.). Windermere (1868); Heversham Head (1869); Ulpha Crag (1869); Brigsteer Wood; by river Lune, near Sedbergh; Naddle Forest; Levens Park, c.fr.; Kentmere Plantation; Wildboar Fell.

56. ***Lophocolea heterophylla*** (Schrad.). Plentiful on decaying wood in Hut Plantation, Levens Park (1875); Haverbrack (1870); Heversham Head Wood, on tree stumps (1869); Brigsteer Wood (1877).

57. ***Chiloscyphus polyanthos*** (L.). Levens Park (1869); Mallerstang, c.fr. (1888); Groove Ghyll, Barbon (1888).

VAR. ***rivularis*** Nees. Plentiful in ditches and small streams. Hill Bell (1869); Mardale (1869); Barbon Fell; Kentmere; Staveley; Rayrigg Wood, Windermere; Witherslack Moss.

58. ***Mylia Taylori*** (Hook.). Two miles north of Ambleside and Patterdale (C. Lyell, vide Hook. Brit. Jung.); Black Crag and Nan Bield (1869); Mardale (1869), ♂ and fr.; Kentmere; Foulshaw; Barbon Fell; Red Screes; Wildboar Fell; Long Sleddale.

59. ***Mylia anomala*** (Hook.). 'Plants with immature colesules were sent to Hooker from Ambleside, July 1813, by C. Lyell.' Carr., Brit. Hep., p. 69. Foulshaw Moss (1869); Witherslack Moss, c.per. (1872), growing in a bog at Barrow Field with *Jung. Schraderi* and *Ceph.* (*Odontoschisma*) *Sphagni*; Barbon Fell (1888); Sandford Bog, near Warcop (1891).

60. ***Plagiochila asplenioides*** (L.). Heversham Head Wood (1869); Levens Park, ♂; Barbon, Whitbarrow (an almost toothless form); on the banks of the river Lune near Sedbergh; Stock Ghyll; Long Sleddale.

VAR. ***Dillenii*** (Tayl.). The fruit and male plants of this variety are much more plentiful than that of the type, and is much less in stature. I lean to Taylor's idea of considering it a species. Kentmere Plantation, ♂ and fruiting freely (1869); Merke Side (1887); Harter Fell; by river Lune near Sedbergh (1882). [Dent, Yorks. c.fr. (1872).]

BIRD-NOTES FROM THE HUMBER DISTRICT.

JOHN CORDEAUX, J.P., F.R.G.S., M.B.O.U.,
Great Cotes House, R.S.O., Lincoln; Ex-President of the Yorkshire and Lincolnshire Naturalists' Unions.

(Continued from the 'Naturalist' for January, 1898, p. 26.)

Ampelis garrulus Linn. **Waxwing.** 16th March 1898. I have seen two at Mr. Kew's shop, Louth, shot in the neighbourhood in December 1897.

Regulus cristatus K. L. Koch. **Golden-crested Wren.** 16th March. I saw some to-day (doubtless on their return migration) in the garden here. They have also been seen at the same date in the Spurn district and along the coast.

Gallinago cœlestis (Frenzel). **Common Snipe.** Several remained in pairs here (Great Cotes) to the end of March, but I have no evidences of their breeding. Snipe do, however, nest regularly in a few favoured localities in North Lincolnshire.

Falco peregrinus Tunstall. **Peregrine Falcon.** 11th April. Mr. Loten, of Easington, has a pair of adults, male and female, shot on migration in March. It is a matter of deep regret that these noble birds should be slaughtered on their appearance in the district.

Hirundo rustica Linn. **Swallow.** 16th April. First at Great Cotes; 17th, many.

Daulias luscinia (Linn.). **Nightingale.** 21st April. Heard; are unusually numerous in the district.

Saxicola œnanthe (Linn.). **Wheatear.** 17th April. Several in the marsh on passage.

Motacilla flava Linn. **Blue-headed Yellow Wagtail.** 17th April. This bird was seen near Easington at this date, following the plough, by a perfectly competent observer.

Phylloscopus sibilatrix (Bechstein). **Wood Wren.** 25th April. I saw and heard this warbler at Woodhall Spa, near Horncastle, in two different places; and on the same day heard

Locustella nævia (Bodd.). **Grasshopper Warbler.**

Alauda arborea Linn. **Wood-Lark.** 25th April. I listened to a Wood-lark singing very sweetly to-day, repeatedly mounting in the air from the upper twigs of an apple tree in the garden of the Victoria Hotel at Woodhall Spa. This was close to a clump of Scotch firs which stood within a few yards of its perch.

Turdus pilaris Linn. **Fieldfare.** 25th April. Saw a considerable number on one of the commons at Woodhall. This is, however, by no means an unusually late occurrence. I have seen them late in May.

Numenius phæopus (Linn.). **Whimbrel.** May, first week. The 'May-birds' have arrived, and we daily hear their familiar notes in the Humber marshes and along the coast.

Machetes pugnax (Linn.). **Ruff.** 5th May. I saw a small flight in the marshes in Great Cotes to-day.

Saxicola œnanthe (Linn.). **Wheatear.** 16th May. I noticed some of the large race of tree-perching Wheatears at this date. They appear very regularly each year on passage along the eastern side of these islands, and are probably on their way to Greenland and the extreme north.

Turdus viscivorus Linn. **Mistletoe Thrush.** 16th May. There were ten on the lawn this evening, old and young. On 5th June I heard a most violent outcry from a pair who had a nest of young in a Scotch fir. The birds were flying to and fro in a very excited manner, and evidently in great trouble. On going to the tree I found a Squirrel close to the nest. At the least this was suspicious, but I do not think Squirrels can be charged with destroying young birds, although, unquestionably, they will sometimes take the eggs. Mr. Roebuck tells me that when Mr. O. Grabham and he were at Wiganthorpe Park last June the keeper told them that he had observed a Squirrel attacking and killing a young Woodpecker.

Chelidon urbica (Linn.). **House-Martin.** 20th May. First seen at Great Cotes.

Cypselus apus (Linn.). **Swift.** 20th May. First occurrence; both are much behind the average date.

Carduelis elegans Steph. **Goldfinch** and

Pyrrhula europæa Vieillot. **Bullfinch.** Both have nested in the garden at Brackenborough Hall, near Louth, this year.

Loxia curvirostra Linn. **Crossbill.** End of May and early June. About a score of Crossbills come each day to some Scotch firs in the garden at Brackenborough. They arrive in one flock, coming from the direction of the Elkington woods on the opposite side of the valley. Their flight is jerky and undulating, and their constantly-repeated call-note on the wing is heard before the birds are seen. I found the ground beneath those trees most frequented

strewed with stripped cones and scales. When they are busy tearing off these latter a slight rasping sound is heard. The power and skill displayed is most extraordinary, as any one may prove by trying to strip the scales from a fir cone with the fingers. No red males were seen in this flock, which I have no doubt were composed of birds bred in some of the fir woods in the locality. My son's gardener says he has never observed them in previous years. On 10th July I saw a beautiful red male and a green female hanging to the end of a fir bough and rending the cones; they were very tame.

NOTE—MOSSES.

***Funaria fascicularis*: An Addition to the West Yorkshire Moss-List.**—I have to correct an error which occurred in my note in this journal last month. I there stated that *Funaria obtusa* had not previously been noted for the West Riding. I should have said *Funaria fascicularis* (Dicks.) Schimp. Both mosses were found—hence the slip but *F. fascicularis* is the new record.—LLEWELLYN J. COCKS, Godolphin House, Harrogate, 7th July 1898.

NOTES—ORNITHOLOGY.

Starling Killing Thrush.—On the 28th ult., about 8.30, when it was getting dusk, I saw a couple of Starlings (*Sturnus vulgaris*) on my lawn, one busy pecking something on the ground, the other standing by. On my going to the window, the first rose up, carrying something heavy in its beak, which it almost immediately dropped, and both birds then flew off with their usual harsh cry of alarm. Curiosity took me at once to the spot, and about a foot away from a heap of feathers I found the naked body of a full-grown Thrush (*Turdus musicus*) with the flesh torn away from its breast and other parts down to the bone, and so far as I saw nothing but the Starling could have done it. The next morning, on examining the remains, I found the viscera, which had been torn out, lying with the heap of feathers on the grass. This to me is a revelation in the economy of the Starling, and perhaps some of your ornithological readers will throw light on it. Surely *Sturnus vulgaris* is not going to develop the carnivorous propensities of that 'Nestor Notabilis' of birds—the New Zealand Kea—(which from tasting 'forbidden fruit' has taken to killing sheep on its own account), and add the flesh of Thrushes to its already fairly liberal diet! I give the facts as I found them, and leave others to suggest and explain.—F. M. BURTON, Highfield, Gainsborough, 3rd June 1898.

P.S.—Probably, as a friend has suggested to me, the Thrush had been killed by a Hawk, and when it was disturbed the Starling attacked it, and it is well known to eat meat from bones, etc., in winter.—F. M. BURTON, Highfield, Gainsborough, 15th July 1898.

Starling feeding a young Thrush.—This morning my maid came to tell me that 'a Gyp was feeding a Throstle.' On going to the kitchen window, I saw in the yard where we often throw crumbs for the birds, a Starling (*Sturnus vulgaris*) assiduously feeding a young but full-grown Thrush (*Turdus musicus*), which followed it closely about, and received a number of morsels from its bill. The Thrush was so much bigger than the Starling that the scene appeared very ridiculous. Baby ought not to be bigger than mother.—W. C. HEY, West Ayton, York, 22nd July 1898.

ADDITIONS TO DR. PARSONS' MOSS FLORA OF THE EAST RIDING.

J. J. MARSHALL,
Market Weighton; Hon. Secretary of the Yorkshire Bryological Committee.

I HAVE lately been examining some *Tortulas* which have been gathered some time, and find I have three not included in the published list.

Tortula ruralis var. ***arenicola*** was gathered at Spurn on 4th August 1894, by Mr. J. F. Robinson of Hull, who stated that it grew profusely on the sandhills in that district. It had previously been recorded as a Yorkshire moss by Mr. R. Barnes, of Saltburn, who found it at Coatham Marshes on similar ground.

Tortula hornschuchiana has also been gathered both by Mr. Robinson and myself. The former first discovered it in a chalk pit at Brough, and I gathered specimens in a similar locality here shortly afterwards.

Tortula montana. Not by any means uncommon in the other Yorkshire divisions, it seems singularly absent from the East Riding, the only habitat I know of being near Goodmanham, on chalk stones projecting a little distance from the surface of the ground. I think I shall have another to add, and will send a note when determined.

Physcomitrella patens. This moss was gathered six years ago by my errand boy, who brought in a small piece of earth with a few plants growing on it. I have sought many times since for it, without success, till Monday morning last. I was having a short stroll before breakfast, and stopped by a small pool side to fill some tubes for diatoms, when I discovered a fine patch of this tiny moss. Dr. Braithwaite only gives six British stations for it, one, however, a Yorkshire one, Stockton Forest, by the late Dr. Spruce.

NOTE—CONCHOLOGY.

Abnormal Example of *Limax flavus*.—This slug is abundant in the yard and garden of a house at Alderley Edge, where a few days ago I found a specimen, about a third grown, with two tails. In spirit the slug measures 25 mm. in length, and at a distance of 3 mm. from the extremity of the keel, the supplementary tail branches off to the right at an angle of about 60 degs. Except that it is not in the same line as the rest of the animal, and is not quite as long, it resembles the normal tail, being keeled to its extremity and having a functional foot-sole.—CHAS. OLDHAM, 16th July 1898.

LINCOLNSHIRE NATURALISTS' UNION AT GRANTHAM.

Rev. EDWARD ADRIAN WOODRUFFE-PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

The 17th meeting of this society was held at Grantham on Tuesday, 7th June, 1898, in the centre of Div. 15. Members of the Lincolnshire Science Society, and the Grantham, Grimsby, and Louth Naturalists' Societies had been asked to co-operate. The result was quite satisfactory as regards the attendance, the company including the President, Rev. W. Fowler, Liversedge; Mr. J. Cordeaux, F.R.G.S., M.B.O.U., Vice-President; Dr. G. M. Lowe, President of the Lincolnshire Science Society; the Organising Secretary of the Union, Rev. E. Adrian Woodruffe-Peacock, F.L.S., F.G.S.; Rev. Canon Warner, Mr. Edm. Turnor, Miss Woolward, Rev. W. W. Mason (Bootle), Major Longstaffe, Mr. J. S. Sneath (Lincoln), Mr. W. Scorer (Lincoln), Mr. Grierson, F.L.S. (Lincoln), Mr. Jno. Hawkins, Mr. Worsdale, Mr. and Mrs. H. Batty, Mr. and Miss Stow (Brandon), Miss Paterson, Mr. Kirkby, the Misses Garvey (Manthorpe); Messrs. B. Crow, T. Gelsthorp, J. Larder, and J. Mawer (Louth), etc., the whole party numbering about 50. The pleasure of a very successful excursion was greatly enhanced by the careful preparation of the route, and by excellent programmes and diagrams; Mr. H. Preston, F.G.S., as local secretary, being entirely responsible for this splendid management.

The party left the George Hotel at 11.30 a.m. in carriages and drove to Saltersford. There they examined some Roman ornaments and a large number of ornamented fragments of Romano-British pottery found recently while making excavations at the pumping station of the Grantham Water Company. From this spot their walk led them along the bank of the Witham to Bath spring—a powerful overflow spring—in the Rookery, Little Ponton. Thence along Stroxton Beck to Adam's Well—a dip spring—and up to Little Ponton Post Office, where the carriages were again taken. They were left again where the Stoke Park beck crosses the highroad. This stream was followed up into the most beautiful park in the whole county, and on to the twelve-foot waterfall, where it has its rise. This powerful spring was considered the second in size in England, but since pipe drainage became universal it has diminished considerably in size. Mr. Edmund and Lady Mary

Turnor magnificently entertained the members at the Hall for luncheon. From Stoke Park the party drove to Woolsthorpe Manor House, the birthplace of Sir Isaac Newton. The return journey was along Ermine Street, and down the valley—a storm valley—to Little Ponton and Grantham, noting the geological features of the route. The usual high tea and reports followed.

Mr. H. Preston's, F.G.S., paper is given elsewhere, so I go on to the other sections.

No one was able to give me a list of the mammals of this neighbourhood. But Mr. W. H. Kirby, B.A., of Swansea, supplied a good list of birds, from which I extracted the following as I ran it into the Union Register:—Tree Creeper, Great Crested Grebe, Hawfinch, Nightingale, Nuthatch, Tawny Owl, Redstart, Red-backed Shrike, Marsh Tit, Grey and Yellow Wagtails, Woodlark, Wryneck, Bittern, Dipper, Great Northern Diver, Black-throated Diver, Greenshank, Osprey, Water Rail, Twite, and Great and Lesser Spotted Woodpeckers.

Nest and Eggs of Waterhen (*Gallinula chloropus*).

On the Witham near Little Ponton, from a photograph taken by Mr. Henry Preston, F.G.S.

At Little Ponton a Waterhen's nest was viewed and photographed. It was built in the water some distance from the bank with no protection whatever, the bottom of the nest being

only a few inches over the water. A sudden flood washed the five eggs out. The birds replaced four, but left the fifth in the water; and we hope by this time have brought their young off safely.

The Lepidoptera given below are extracted from a long list and marked catalogue, made from his specimens by Mr. T. Walpole, of New Sowerby, Grantham. These specimens are now in the Grantham Museum; and I regret to say are not localised. The value of such collections is reduced to a minimum; and in the distribution list Mr. W. Lewington and I are preparing will be disregarded I am sorry to say.

Papilio machaon.
Aporia cratægi.
Colias edusa.
Gonepteryx rhamni.
Argynnis aglaia.
Vanessa polychloros.
Vanessa antiopa.
Melanargia galatea.
Erebia epiphron.
Pararge egeria.
Thecla quercûs.
Lycæna ægon.
Acherontia atropos.
Sphinx convolvuli.
Sphinx ligustri.
Chœrocampa celerio, one only.
Chœrocampa porcellus.
Smerinthus tiliæ.
Ino globulariæ?
Nola confusalis.
Cossus cossus.
Porthesia chrysorrhœa.
Cilix glaucata.
Dicranura furcula.
Pterostoma palpina.
Notodonta trepida.
Acronycta ligustri.
Leucania conigera.
Axylia putris.
Xylophasia hepatica.
Miana arcuosa.
Agrotis lunigera.
Noctua glareosa.
Eremobia ochroleuca.
Polia flavicincta.
Aplecta advena.
Angerona prunaria.
Pericallia syringaria.
Selenia lunaria.
Crocallis elinguaria.
Nyssia hispidaria.
Geometra papilionaria.
Phorodesma pustulata.
Hemithea strigata.
Asthena sylvata.
Strenia clathrata.
Ligdia adustata.
Emmelesia alchemillata.

[It would be of interest to learn where in the neighbourhood of Grantham some of these species have occurred; and the value of this and all similar lists would be considerably enhanced by the addition of localities in which the species occur.—Ed. Nat.]

A few Coleoptera were taken by Mr. Worsdale and myself.

Corymbites cupreus (type).
Pyrochroa serraticornis.
Telephorus nigricans.
Agriotes obscurus.
Athous hæmorrhoidalis.
Attagenus pellio.
Gastroidea raphani.
Ragonycha limbata.
Demetrias atricapilla.
Baris T-album.
Ceuthorrhynchus pollinarius.
Necrobia violacea.
Byrrhus pilula.
Phyllobius argentatus.

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Phyllobius viridicollis.
Sitones lineatus.
Sitones puncticollis.
Telephorus lividus.

Many other divisions of the insect world were represented in the sweepings, and everything was taken. But it will require months to work out the material for the Registers and future publication, thanks to our kind Secretary, Rev. A. Thornley, F.L.S., F.E.S., and many other willing friends.

The following is a list of Spiders taken at Grantham before and at the meeting of the Union. I add the Divisions for which they have also been recorded in our Register. All have been verified most kindly by Rev. O. Pickard-Cambridge.

Amaurobius ferox Walck. Div. 8.
Amaurobius similis Bl. Div. 3.
Lycosa amantata Clk. Ds. 2, 3, 5, 8.
Philodromus aureolus Clk. Divs. 2, 3, 5, 7, 8.
Xysticus cristatus Clk. Divs. 2, 3, 4, 5, 8.
Drassus blackwallii Thor. Ds. 3, 8.
Epeira diademata Bl. Ds. 2, 5, 8.
Epeira cucurbitina Clk. Divs. 2, 3, 7, 8.
Meta merianæ Scop. Divs. 3, 8, 9.
Meta segmentata Clk. Ds. 3, 7, 8.
Tegenaria derhamii Scop. Ds. 3, 8.
Zilla x-notata Clk. Divs. 3, 5, 8.
Steatoda bipunctata L. Ds. 3, 8, 9.
Theridion tepidariorum C.L. Koch. Not taken before in the whole county.
Theridion pictum Hahn. Not taken before in the whole county.
Theridion denticulatum Walck. Divs. 2, 3, 4, 8.
Theridion varians Hahn. Divs. 2, 3, 4, 8.
Theridion sisyphium Clk. Divs. 2, 3, 7, 8.
Dysdera cambridgii Thorn. D. 8.
Harpactes hombergii Scop. Ds. 8, 9.
Tetragnatha extensa L. Divs. 2, 7, 8, 9.
Leptyphantes tenuis Bl. A new record for the whole county.
Linyphia montana Clk. Divs. 3, 8.
Stemonyphantes bucculenta Clk. Divs. 3, 8, 9.
Pedanostathus lividus Bl. Div. 3.
Neriene rubens Bl. Div. 8.

I have to thank Mr. Worsdale, of Grantham, for most careful sweeping and collecting.

The Phalangidæ I must leave for a paper in the short notices at a later date. I want to print the whole county records as we yet know them.

The Rev. W. W. Mason, of Bootle, Liverpool, acted as recorder for the day for the Phænogamia, etc. In all 216 species and varieties were noted. From which I make the following short selection :—

Alnus glutinosa Medic.
Diplotaxis muralis DC.
Doronicum plantagineum Linn.
Geranium pyrenaicum Burm. fil.
Chrysosplenium oppositifolium L.
Lycium barbarum Linn.
Scrophularia aquatica var. oblongifolia Loisel.
Polygonum bistorta Linn.
Avena pratensis Linn.

The following species of Hepaticæ were taken just before or at the meeting, in Div. 15.

Cephalozia bicuspidata Dum.
Conocephalus conicus Neck.
Lophocolea bidentata Nees.
Lophocolea heterophylla Nees.
Lophocolea videritata Dumort.
Lunularia vulgaris Mich.
Marchantia polymorpha Linn.
Metzgeria furcata Dum.
Pellia epiphylla Linn.
Porella platyphyllea Lindb.
Radula complanata Dum.

The Lichens taken just before or at the meeting in Div. 15 were few and common.

Cladonia pyxidata Fr.
Collema fasciculare Ach.
Collema granuliferum Ach.
Collema limosum Ach.
Lecanora subfusca L. var. rugosa.
Parmelia physodes Linn.
Peltigera canina L.

The Mosses must stand over for a later paper in the short notices too. Quantities were taken both before and at the meeting, and there has been no time to work them out yet; they are in the hands of specialists at present. Considered as a whole the Grantham meeting was the most successful one the Union has had, or will be when the material collected is worked out.

At Saltersford, in the pumping-house, hanging from the roof, was a most curious specimen of *Lentinus lepideus* Fr., a species which is wont to assume abnormal forms. The Rev. W. Fowler was satisfied about the species, but sent it on to Mr. Massee to verify.

NOTE—GEOLOGY.

Erratics on the Yorkshire and Lincolnshire Coast.—Mr. Burton, in his paper on 'Lincolnshire Coast Boulders' in 'The Naturalist' for May 1898, asks for information with regard to the travelling of boulders by tidal action along the coast. I can assure him that there is not the smallest doubt that on the Yorkshire coast boulders travel southwards owing to the action of the tides, and that, while a good many of the boulders on the Holderness coast are derived from the disintegration of the soft cliffs of Boulder Clay along that coast, many are brought down from the north of Flamborough Head. These boulders collect for a time at certain places along the coast of Holderness, but when the tides run strong with a northerly or easterly wind many are swept southwards and collect upon the Binks just off the point of Spurn Head. The Binks, however, do not grow perceptibly, and there cannot be a doubt that many boulders are continually being swept by the tide across the Humber mouth, and being deposited afresh at Donna Nook and along the north coast of Lincolnshire, where the boulders are very similar to those on the Holderness shore. Here they begin their wanderings afresh, and travel onwards towards the south, until by continual friction they became worn down to pebbles and shingle. At the same time, together with these travelled boulders, there would always be some which had not travelled so far, and some washed out of the shore or cliffs of the immediate neighbourhood. Hence with regard to boulders between the tide marks on the Lincolnshire coast there is always the possibility that they may have been brought to their present position by what Mr. Harker well describes as 'the powerful tidal scour from N. to S.' Any who have tried bathing near Spurn Head will have learnt from experience that the southerly current is often strong enough to make it exceedingly difficult to retain one's footing.—H. E. Maddock, Patrington Rectory, 2nd May 1898.

BOOK NOTICES.

We have received from Prof. Dr. **Jakob Eriksson,** of Stockholm, a reprint of his paper published in the Botanical Gazette for January 1898, giving **'A General Review of the Principal Results of Swedish Research into Grain Rust,'** and summarising a large number of observations during the years 1890 to 1896.

The | Birds of Montreal | By | **Ernest D. Wintle,** | "Associate Member of the American Ornithologists Union." | — | Birds observed in the vicinity of Montreal, Province of Quebec, | Dominion of Canada, with Annotations as to whether they | are "Permanent Residents" or those that are found | regularly throughout the year; "Winter Visitants," | or those that occur only during the winter season, | passing north in the spring; "Transient Visitants," or those that occur only | during migrations in spring and | autumn; "Summer Residents," | or those that are known to | breed, but which depart | southward before winter; and | "Accidental Visitants," or strag- | glers from remote districts; giving | their relative abundance as to whether | they are rare, scarce, common or abundant; | data of nests and eggs when found, and especially | noting the species that breed in the City and Mount | Royal Park; also data of migratory arrivals and de- | partures, and other notes, all of which are deduced | from original observations made during the past fifteen years. | — | Montreal: | W. Dugdale & Co. | — | 1896. [8vo. cloth, xiv + 281 pages and 3 plates: the title-page has a slip pasted on as follows: John Wheldon & Co., 58, Great Queen Street, London, W.C.]

With so copious a title-page as this book possesses, we are absolved from the need to state the contents of this book, further than to mention that the Avifauna of Montreal ends on p. 227, the remaining 54 pages being a series of minor articles with a separate title-page: Original | Sporting Sketches | compiled by | David Deane. | 1895. The last of these articles gives a useful summary of the game and fishery laws of Canada; the others are but anecdotes. The plates are rough lithographs possessing decided artistic demerits. The number of species included in the list amounts to 254, and the nomenclature used is that of the A.O.U. list.

From M. **Charles Janet** we have received a series of reprints of some of his valuable and useful **papers on Ants,** more especially as regards their relationship with myrmecophilous insects of various kinds. One of these ant-parasites has a very odd appearance on its host. The ant is *Lasius mixtus,* each individual of which appears to be taken possession of by one or more examples of a mite (*Antennophorus uhlmanni*) which is fully as large as the ant's own head, and which feeds on the nutritive liquid which the ant disgorges. These parasites seem to arrange themselves symmetrically on the ant-host—usually one under what in a vertebrate would be its chin, and one on each side of the abdomen -and so place themselves as to incommode as little as possible the movements of their host. The titles of the papers are as follows:—'Sur les rapports de l'*Antennophorus Uhlmanni* Haller avec le *Lasius mixtus* Nyl.' (4to, extrait des Comptes Rendus, t. 124, p. 583, Paris, 15 Mars 1897); 'Études sur les Fourmis les Guêpes et les Abeilles Note 13—Sur le *Lasius mixtus* l'*Antennophorus Uhlmanni* etc.' (8vo, Limoges, 1897, pp. 62); 'Note 14—Rapports des Animaux Myrmécophiles avec les Fourmis' (8vo, Limoges, 1897, pp. 99); Note 15—'Appareils pour l'Observation des Fourmis et des Animaux Myrmécophiles' (8vo, reprint from Mem. Soc. Zool. France, 1897, x. 302-323 and pl. 10); and 'Notice sur les Travaux Scientifiques présentés par M. Charles Janet à l'Académie des Sciences au Concours de 1896 pour le Prix Thore' (8vo, Lille, 1896, pp. 94). The last gives first titles and then abstracts of the 32 papers submitted in competition for the Thore prize, which, it may be noted, was gained by the author. The papers and notes sent to us are all of much interest and show signs of scientific insight and careful observation, duly reasoned out.

Naturalist.

GEOLOGY SOUTH OF GRANTHAM.

A Paper Read at the Meeting of the L.N.U. at Grantham, 7th June 1898.

HENRY PRESTON, F.G.S.

When the Lincolnshire Naturalists' Union visited Grantham in June 1896, some features of the surface geology of the district lying north of the town were described (see 'Naturalist,' Sept. 1896). It is now proposed that the Union shall make another visit and deal with the country lying south of Grantham as far as Colsterworth.

Geologically, the ground over which we shall pass is not so varied as the district to the north, nor has it been subjected to such a vast amount of denudation, hence the rock formations cropping out at the surface are less numerous and the surface features are more uniform in character.

It will be seen from the diagram, Fig. 1, that, with the exception of a few small river valleys, nearly the whole surface to be visited consists of Lincolnshire Limestone and Boulder Clay, and it lies wholly within Sheet 70 of the Ordnance Survey.

The sections to be seen on this visit will not be numerous; they comprise Plateau Gravels, Lincolnshire Limestone, Northampton Sands, and Upper Lias Clay. The gravel which we shall see at Little Ponton appears to be the result of denudation of the Boulder Clay. It consists of rounded and smoothed pebbles of Inferior Oolite, Liassic Limestones, Marlstone, Carboniferous Limestone and Sandstone, with a few Flints and very few Quartzites, Igneous Rocks, or hard Palæozoic Rocks. From this pit I have collected representative fossils of Mountain Limestone, Lower and Middle Lias, Lincolnshire Oolite, Great Oolite Limestone, Cornbrash, and Oxford and Kimeridge Clay. These, together with other fossils referred to, may be inspected in the Grantham Museum.

The Lincolnshire Limestone was described on your former visit, and it will suffice upon this occasion to mention that it is an Oolitic Limestone, averaging about 100 feet thick, rather variable in lithological character, sometimes yielding coarse shelly rag-stones, and at other times good beds of valuable freestones.

The Northampton Sands are here very variable. They often show alternating beds of brown, purple, green and black clays, with irregular beds of sands, often very ferruginous or calcareous, and again pure white grains of silica. At Colsterworth

these sands are very ferruginous, being, in fact, a good iron-stone, whilst in a well sunk at Harrowby to the N.E. of Grantham, a pure white quartzose bed of sand about two feet thick was passed through just before reaching the Lias Clay.

I may here remind you that the Jurassic system consists of a great series of fossiliferous rocks, composed of variable beds of clays, sandstones, and limestones, and which extend across England from the Yorkshire coast on the N.E. to the Dorset-shire coast on the S.W. The lower division of this great and interesting system is the Lias formation. The Lias Clays are the muddy deposits of an old ocean, deposited under moderately deep water conditions, and which occupied the site of what was previously great inland salt lakes and barren desert lands. The total thickness of these clays varies locally from 800 feet to 1,000 feet, and there is a great and gradual change in species between the bottom and top beds, which in itself indicates a vast period of time during which the deposits were accumulated. Our study to-day will lead us only to the top member of this formation, the Upper Lias, a series of clays about 120 feet thick. Locally they may be divided into four zones, the lines of division not being very clearly defined. The highest beds of the Upper Lias are characterised by the abundance of a small bivalve shell called *Leda ovum*, and hence called the *Leda ovum* beds. These beds used to be well seen in a small pit at Colsterworth, and the pit has yielded, in addition to *Leda ovum*, *Ammonites bifrons*, *Belemnites*, and *Myacites donaciformis* rather abundantly, whilst several specimens of the Brachiopod shell *Discina reflexa* have been found attached to the shells of *Leda ovum*. *Am. heterophyllus* and *communis* also occur very sparingly.

Below the *Leda ovum* beds we have the *Communis* beds, the upper 50 feet of which is not very fossiliferous. The base of the *Communis* beds consists of clays crowded with small Ammonites, chiefly *Am. communis* and *Am. annulatus*. These beds have been well displayed in Rudd's brickyard on the south side of the town, and numerous fossils have been collected. The unfossili-ferous portion of these beds is seen in the Brick Company's yard in Papermill Lane and in the Spittlegate railway cutting, and is characterised by the common occurrence of crystals of selenite, pyrites, and jet, and are termed the Selenite Clays. Below the *Communis* beds occur the third division called the *Serpentinus* beds, clays with large nodular concretions, and in which Ammonites of this group are particularly abundant.

The lowest division of the Upper Lias is known as the Dumbleton series. These consist of finely laminated blue shales, with bands of nodules composed of Argillaceous Limestone, often called, from their fissile character, the Paper Shales. Both these lower zones have been bared during working in Rudd's brickyard, but they are not now visible.

At the top of the fossiliferous portion of the *Communis* beds in Rudd's pit, there occurs a bed of iron-stained nodular concretions about two feet thick, with numerous oolitic grains about one-sixteenth of an inch in diameter, mixed loosely with the nodules. The oolitic grains are not iron-stained. This bed has yielded about a dozen species of Gasteropods, including *Onustus, Cerithium, Turbo, Pleurotomaria*, and others, together with *Nucula hammeri* (very common), small Ammonites, Belemnites, etc.

Coming now to the physical features of the geology south of Grantham, I would call to your mind the well-known north and south trend of the Lincolnshire cliff. This cliff is formed by the escarpment of the limestone beds, which dip at a gentle angle towards the S.E., and it is westwards from this escarpment that the older rocks, ranging from the Upper Lias downwards, may be studied. At the south end of Grantham, the cliff ends its southward course and takes a more or less westerly direction, Grantham lying within the angle thus formed. This increases the interest of our district, insomuch that by a careful study of the rocks south of Grantham some clue may be obtained as to the origin of the Lincolnshire cliff. The change in the direction of the cliff is due to physiographical causes, rain and river action, coupled with the general lie of the rocks and the protection given to the Limestone by the capping of Boulder Clay. The westerly course of the cliff from Grantham will be seen to correspond more or less with the tributary valleys on the west of the river Witham (Fig. 1).

That portion of the river Witham which lies to the south of Grantham is comparatively of a recent date, whilst the ancient stream which did the work of carving out the valley of Grantham and northwards originated in large springs which rose to the W.S.W. of the town. The watershed of these ancient springs appears to have been formed chiefly of Marlstone Rock. This was gradually cut away until the underlying and impervious Lower Lias Clay was reached. With the removal by denudation of the gathering ground, the springs decreased in size until now they are very small indeed, and we have only the old valleys with their alluvial deposits to tell of their former work.

Fig 1

A - Lower Lias D = Upper Lias G - Boulder clay.
B = Mid: Lias Sands E = Northampton Sand. H = Plateau Gravel.
C = Marlstone F = Lincolnshire Oolite. J = River Gravel.

One of the chief surface features is the more recent river valley. Probably in pre-Glacial times, when the old river flowed from the west, a small overflow spring existed just at the S.E.

angle now forming Grantham, and a short valley had been formed by the tributary stream. Such overflow springs rising on the east side of the valley may be seen at the present day, but in consequence of the N.W. to S.E. dip of the rocks, these springs only flow when the line of saturation of the limestone is reached, and have comparatively very little action in cutting tributary valleys. An examination of Geological Sheet 70 will show that the springs rising on the west of the Witham are much the more powerful and have formed tributary valleys at Stroxton, Wyville, and Skillington, whilst on the east side such springs as do occur have scarcely been at work long enough to be indicated on the map.

After the Glacial period the whole of this limestone plateau at least was covered with Boulder Clay, and doubtless the depression formed by the short tributary valley at the S.E. corner of Grantham would form a surface depression along which the rains and melting snow and ice would find a ready descent into the old valley, whilst the original spring would reassert itself and help to clear away the Boulder Clay which had blocked up its course. As time went on this spring would gradually cut back its head; rains and frosts would help to widen its banks; tributary streams from the west would augment the volume of its water; and thus the present valley, extending from Grantham to North Witham, would be formed. The colouring of the map shows that the stream has cut through the Boulder Clay, Lincolnshire Limestone, and Northampton Sands, and into the Upper Lias Clay, from Grantham to a point a little south of North Witham, but here denudation has not had time to work through the limestone, so that we may look upon this valley as still in process of growth. Whether the river will ever be much larger than at present depends upon what lies beneath the Boulder Clay to the west and south-west of the present valley. According to indications shown at the northern edge of this clay, the limestone does not extend in these directions, for the outcropping of Northampton Sand and Upper Lias Clay along this line seem to show that these older rocks lie immediately beneath the drift and limit the present watershed. Also, it will be seen from the map that several areas of limestone to the west of the river are nearly surrounded by Upper Lias Clay, in fact the whole area north of Buckminster bounded by the river valley on the east and extending as far as Waltham-on-the-Wold on the west, an area of something like 30 square miles, is one great outlier of lime-

stone rock which is being rapidly denuded away by the various springs rising within it. These streams, coupled with the action of wind and weather, will in time clear away the whole of this limestone, and the underlying rocks of the Liassic series will become the surface rocks. Such rapid denudation cannot possibly take place on the east side of the Witham, hence we may picture to our minds a time when the Lincolnshire cliff will extend southwards for several miles beyond its present limit at Grantham.

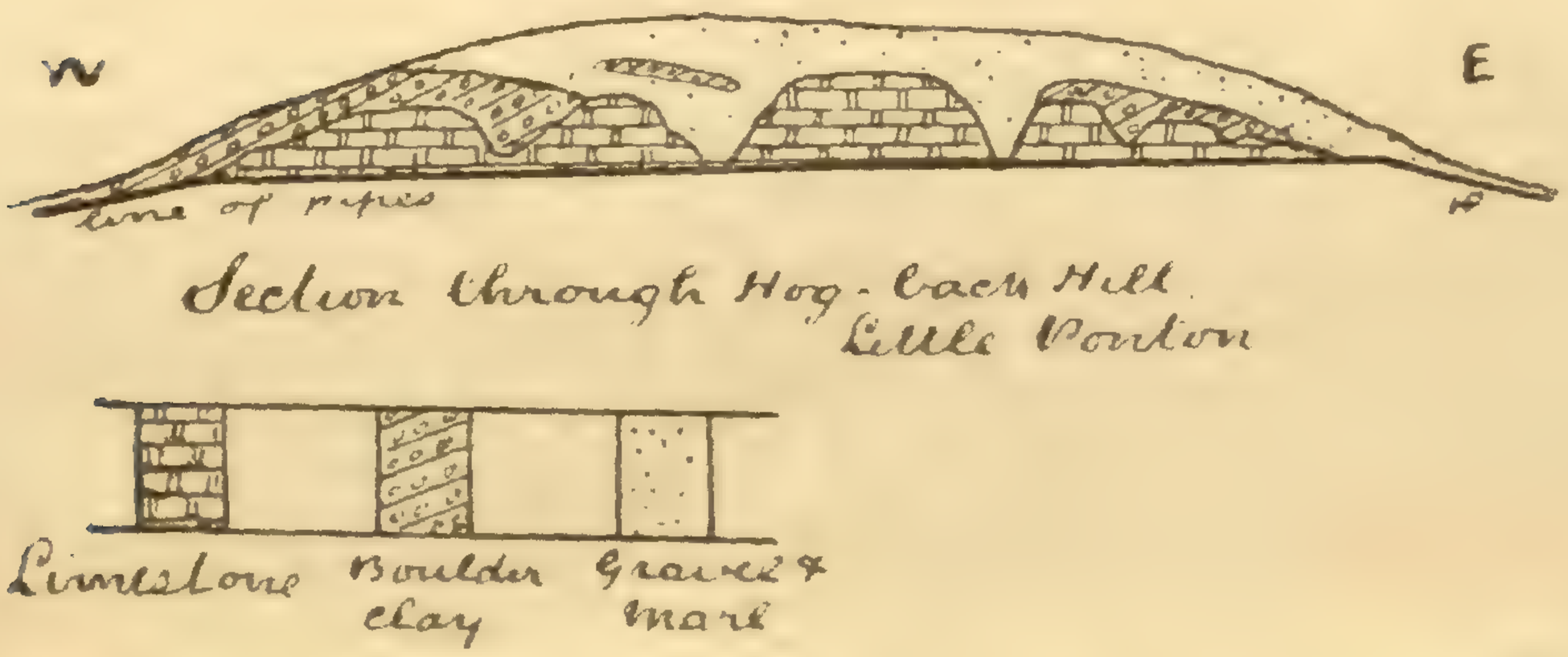
Besides the direct action of the streams in wearing away this mass of limestone, it will be interesting to notice a secondary cause helping to remove it.

In the autumn of 1897 the Waterworks Company had occasion to lower one of their supply mains across the hill marked *a b* in map, Fig. 1. In the survey map this hill is shown capped with Plateau Gravel, and a pit in this gravel will be seen at Little Ponton.

The trench cut by the Waterworks Company extended for about 500 yards in a W.S.W. direction, and in the deepest part was 22 feet deep. Very little of the gravel was met with, but limestone was reached at a depth of 6 feet from the surface.

From the sketch of the section, Fig. 2, it will be noticed that the contour of the hill is one uniform curve, but it was soon

Fig 2

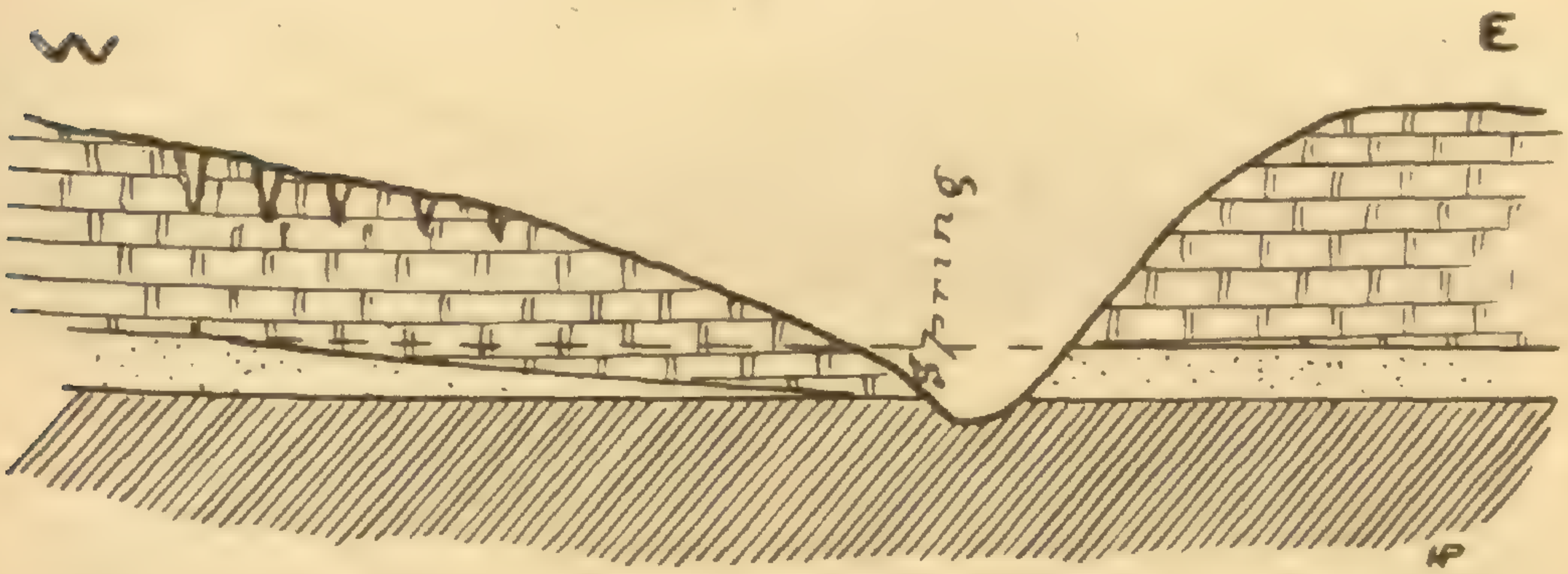


Section through Hog-Cock Hill Little Ponton

found that the rock surface did not follow the contour of the ground. Various beds of Boulder Clay were met with and some thin beds of sand and gravel, but the most remarkable feature was a series of valleys, or large fissures running approximately in a N. and S. direction. These fissures, or swallow holes, were generally filled with a red marl, and the sides were inclined at

about 40 degrees. The width at the top varied from 20 yards to 40 yards, and the bottom of each was reached with one exception. The sketch is exaggerated in vertical scale so as to show the feature more distinctly. The first idea was that these openings in the rock were ancient pre-Glacial valleys which had been filled in by drift material, but the inclination of the sides was far too steep for ordinary valleys, and the sides made practically a sharp angle at the bottom. Besides this, the sides of the valley, and generally the top of the rock, consisted of a layer of limestone breccia from 2 feet to 6 feet thick—angular pieces of limestone cemented firmly together by calcite, which we should scarcely expect to find on the banks of a valley having such a high angle. It was also noted that the trend of the fissures was about parallel with the course of the Witham. It may be interesting now from these facts to try and draw a conclusion as to the origin of these large openings. It will be noticed from Fig. 3 that the limestone rests on Northampton

Fig 3



Sketch section through Witham valley at Little Ponton to show formation of Fissure cracks.
Dotted line shows position of sand bed before valley was carved out.

Sands, underlying which is an impervious bed of Upper Lias Clay. We have then a large mass of limestone dipping towards the S.E., being separated from an impervious clay by sandy beds only. Now, when a mass of pervious rock rests on an impervious bed, there is always a tendency to slip in the direction of the dip when the rocks are saturated with water, this tendency increasing with the inclination of dip. The dip in this case is very small, hence the probability of a slip is not

great. When rain falls and sinks into the ground it percolates through the fissures of the rock until an impervious surface is reached, and the water then travels as a sheet along this surface in the direction of the dip. If a section of the pervious and impervious rock now be cut at right angles to the dip, as is often done in railway cuttings, the water will ooze out along the juncture of the two beds. When such sections are formed naturally, as in the case of the Witham Valley before us, the water may find a little easier outlet at one point than another, which by degrees is enlarged into a spring, and water rushes out more or less copiously. This is what has occurred in the case before us. The Witham Valley has formed the section cutting into the Lias Clay, and at the junction of beds there are two large dip springs called the Hovel Spring and Adam's Well, and marked *c* and *d* in plan, Fig. 1. Now all this water cannot ooze out and rush out from between a clay and sandstone or limestone without gradually bringing away, particle by particle, some of the two rocks, the upper surface of the clay, and the under surface of the limestone, or, in this case, sandy bed. This action is chiefly a mechanical one, and is greatest near the outlet, the result of which must be a lowering or letting down of the upper rock which will cause fracture on the upper surface, the fractures being approximately parallel to the section. Hence, I believe, the peculiar valley-like openings crossed in the pipe trench are fractures caused by the letting down of the limestone rock due to the scouring action of the two springs, the Hovel Spring and Adam's Well. The sands have been gradually washed out, much of the lower bed of limestone has been dissolved by carbonated water, and some of the upper surface of clay has been removed in the course of time, with the result that the limestone mass has gradually settled down to its bed, causing strain and ultimate fracture along the upper surface. Granting the first crack, denudation by percolating carbonated water will readily account for subsequent widening and for cementing the rubbly sides of the fissures.

Here, then, we have an area recording its own history of destruction and change, and giving us facts which may be well used in explaining the past history of the Lincolnshire cliff, and possibly also of the great gorges in that cliff at Honington and Lincoln.

On our return journey we shall have an opportunity of passing down a very picturesque valley in the limestone between Woodnook and Little Ponton. The valley is not marked on the

map because the limestone has not been cut through. This is a dry valley and has doubtless originated in the rush of storm water flowing off the surface of Boulder Clay. No springs are visible, and, in fact, we should scarcely expect to find them, seeing that the dip lies in the opposite direction.

List of Upper Lias Fossils from the District Visited.

Reptilia.

Ichthyosaurus.

Cephalopoda.

Nautilus striatus.
Nautilus terebratus.
Ammonites annulatus.
Ammonites bifrons.
Ammonites communis.
Ammonites serpentinus.
Ammonites crassus.
Ammonites elegans.
Ammonites falcifer.
Ammonites fibulatus.
Ammonites heterophyllus.
Ammonites lythensis.
Ammonites exaratum.
Ammonites hollandrei.
Ammonites fimbria.
Belemnites vulgaris.
Belemnites levidensis.
Belemnites subtenuis.
Belemnites sp.

Gasteropoda.

Pleurotomaria perseus.
Pleurotomaria sp.
Cerithium armatum.
Cerithium costellatum.
Cerithium sp.
Onustus spinosus.
Alaria sp.
Amberleya capitana.
Fusus sp.
Turbo theodori.
Turritella sp.
Natica buccinoides.

Lamellibranchiata.

Astarte minima.
Arca ferruginea.
Nucula hammeri.
Leda ovum.
Arcomya elongata.
Myacites donaciformis.
Trigonia pulchella.
Pecten plumilus.
Lucina sp.
Inoceramus dubius.

Brachiopoda.

Discina reflexa.
Rhynchonella sp.

Annelida.

Serpulæ.

Echinodermata.

Pentacrinus.

Plantæ.

Wood.

BOOK NOTICE.

From our valued contributor, Dr. **P. Q. Keegan,** we have a reprint of a paper on **'The Red and Blue Colouring Matters of Flowers,'** by him, which appeared in the March number of 'Natural Science,' pp. 194-199.

NOTE—HYMENOPTERA.

***Meteorus subfuscatus* in Yorkshire.**—As parasitic upon the *Orchesia micans* from Wadworth, near Doncaster, I have reared a number of this species, which has been very kindly determined for me by Mr. G. C. Bignell, F.E.S.—E. G. Bayford, Barnsley, 14th July 1898.

NOTE—MAMMALIA.

Foxes in Lakeland and the 'Fox-Screw.' —The Fox (*Vulpes vulpes*) has never been preserved or protected here, as in the bordering counties. Farmers have made little scruple about killing them on any available occasion. The best account of the species is in Macpherson's Fauna of Lakeland, 1894, pp. 12-14, and he gives extracts from parish accounts for money paid, on proof produced, for killing the animals. The area covered by these quotations practically represents the Lake District, including Ulverston (Bardsley and Ayre churchwardens' accounts) and Cartmel, in which place a society was formed 'for the express purpose of extirpating all the Foxes in that district' in 1847. In extenuation Mr. Macpherson says:—'Almost all that has been said of the vulpicide practised among the crags of the Lake mountains will seem disagreeable reading to any south country fox-hunter, but the truth should be told. The fact is notorious that animal life is so scarce on our hillsides that, unless the Foxes helped themselves to 'lamb' occasionally, they could hardly exist. On the other hand, these animals often make their 'earths' in precipitous places, where the gun and the steel trap must be employed to keep their numbers in check.' (l.c. p. 15.) But there was another way of reaching them when in hiding, which Mr. H. S. Cowper, F.S.A., illustrates in his very interesting notes on 'Obsolete Contrivances in Lakeland' in the current volume (xv., pt. 1, p. 272) of the Trans. Cumb. and Westm. Antiq. and Archæol. Soc. This is the 'fox-screw,' of which he gives two examples, and also of a fox-trap. Here is a portion of the description of the screws, which each resemble a sort of double corkscrew. They come from Langdale, Westmorland. 'They are very neatly and well wrought in iron. . . . One of them, which finishes in a screw end, is rather less than four inches in length, and branches into a powerful double screw very sharp at the points. The other is nearly 4½ inches in length, and the "business end" is shorter and not so heavy. . . . In both cases they were meant to fasten to a shaft or pole. . . . As a rule several poles of various lengths were kept, and the one most suited to the place in which the Fox was hidden was used. . . . A similar instrument of smaller size was employed for screwing Rabbits, and at the present day a briar is often used in the same way.' As rewards were given for heads as vermin, 'fox-screws existed at one time at every fell farm, and I believe that in some of the small local packs of hounds it is still the custom for the huntsman to carry one.' —**S. L. Petty, Ulverston, 18th June 1898.**

BOOK NOTICE.

A useful broadsheet to all who are engaged in working out distribution of plants and animals in the British Isles is one we have received from Mr. **Alexander Somerville,** B.Sc., F.L.S., of Glasgow. It is intituled **'County and Vice-County Divisions of the British Isles.** (For Biological purposes.)' It first enumerates the names and numbers of the 112 divisions set out for Great Britain by Hewett Cottrel Watson in 1852, and the 40 divisions of Ireland proposed in 1896 by R. Lloyd Praeger. They are numbered 1 to 112 for Great Britain and 1 to 40 for Ireland, but would it not have been better to have recognised the British Isles as an entity and numbered the divisions from 0 (Channel Islands) to 152? This is what we ourselves shall do in MS. when using the sheet. The sheet also gives the 'Particulars of Division of the Larger Counties'—a very necessary thing in the absence of a map. Full acknowledgment of assistance and advice is rendered to no less than thirty naturalists who interest themselves in comital distribution. We may add that copies are priced 4d. each (3 copies for 8d.), post free in millboard tube, and are to be had from A. C. Burns, printer, 383, Sauchiehall Street, Glasgow. We trust there will be a large sale. It is dated with embossed stamp, 'May 1898.'

BOULDERS AT BRIGG.

F. M. BURTON, F.G.S., F.L.S.,
Highfield, Gainsborough, Lincolnshire.

THROUGH the kindness of Mr. C. L. Hett, of Springfield, Brigg, I had recently an opportunity of examining a bed of chalky boulder clay which had been disturbed in laying down pipes to increase the Brigg water supply.

This glacial drift deposit covers a considerable area of the land in that district and overlies the Oxford clay. The trench cut for the pipes, which was filled in when I saw it, was about 70 yards long, and the ground disturbed showed a confused mass of chalk, gravel, and flints, mostly small, such as are usually found in sections of this nature; but, under a hedge on the side of the field in which the trench had been dug, were some fair-sized boulders, several of which had been placed in the ruts of a cart-track running by the hedge, and amongst the latter were two of a crystalline nature which have been kindly examined by Mr. T. Sheppard, of Hull, and the details are given below.

Personally, I can give no further information about the boulders, nor say how they came into the ruts and places where I found them, but Mr. A. Atkinson, C.E., Engineer to the Commissioners of Ancholme Drainage and Surveyor to the Commissioners of Sewers, whose observations are to be relied on, in a letter to Mr. Hett, says: 'The cutting at the water-works was entirely through glacial drift—chalk, gravel, and flints, with lenticular beds of black clay, possibly re-deposited Oxford clay. There were several boulders, some of which I had put under the hedge by the roadside with a view to future preservation, an idea that was never carried out. There was one particular boulder with the finest ice-scratches I ever found. It, however, split up into thick flakes under the action of frost.'

This boulder I did not see, but several of those remaining by the hedge side, and in the ruts, were plainly and deeply scored by ice; and a small clay nodule ($5\frac{3}{4} \times 3\frac{1}{2} \times 2$ inches) which Mr. Hett had kindly taken care of for me, contains more perfect ice-marks than are usually found in loose boulders. It has been placed in the Lincoln Museum, where it can be examined by those who care to see it. Mr. Sheppard says that nodules like this are frequently found in the Holderness boulder clays, and are usually well scratched on the top and bottom, more rarely on the sides.

Description of Boulders.

No. 1. A pink granite (14 × 9 × 3½ inches). The matrix of this specimen resembles to a remarkable degree that of shap granite, but lacks the necessary large felspar crystals which shap granite always contains.

No. 2. A highly crystalline rock (9 × 8 × 6 inches) difficult to describe. It is in all probability Scandinavian.

The boulders on the hedge side (one of which measured 12 × 7 × 4 inches) were principally clay-limestone and arenaceous in character.

4th August 1898.

NOTE—BOTANY.

Plants of Silverdale, West Lancashire.—Mr. S. L. Petty, 24, Queen Street, Ulverston, N. Lancs., writes to us that he has been botanising at Silverdale, and to make a more complete list of the plants in that area of West Lancashire, he will be obliged if any reader, or, in fact, anyone who has botanised there, will communicate either a few plants or a list of species seen; but such must be properly located. 'Silverdale' only is not sufficient, as many workers do not know the limits of Westmorland and Lancashire on that portion of the boundary of both counties; and Westmorland is outside the area of our correspondent's work. All such help will be duly acknowledged.—Eds. Nat.

NOTE—GEOLOGY.

Geology South of Grantham.—It has been suggested to me that the paragraph at the end of my paper on 'Geology South of Grantham,' beginning 'Here then we have an area,' etc., might be understood to imply that the fact of strata slipping may be used in explaining the past history of the Honington and Lincoln gorges. Of course, I need scarcely say that such was in no way the idea in my mind at the time of writing. It occurred to me that the facts of (a) the south-westerly dip of strata, (b) washing out of sand bed between limestone and clay, and (c) consequent slipping and fissuring of limestone, all working together for the rapid denudation of the limestone lying to the south of Grantham and west of the river Witham, would help us to picture the time when the limestone extended from the present Lincolnshire cliff to the westward, and no escarpment had been formed; the streams then flowing from the west cut out their east and west valleys in this limestone, just as the small streams south-west of Grantham are doing at the present time, the gorges at Lincoln and Honnington being parts of these ancient valleys. The paragraph was perhaps too sweeping a generalisation, but with this explanation I trust it will not be misunderstood.—Henry Preston, Grantham, 23rd August 1898.

NOTES AND NEWS.

Right gladly did we read in March 'Journal of Botany' that at last a new British Flora is in preparation by the Rev. E. F. Linton, of Bournemouth. In such hands it is almost a foregone conclusion that the work will not only be done, but done well. Those of us who have been reared on Hooker and Babington know how out of date both authorities are now; and, alas, how much we shall have to forget when the new flora is in our hands, based on the London Catalogue. But as the difficulty has to be faced, we are safer in Mr. Linton's company than in that of the industrious compiler, who, in botanical matters, is too often with us.—S.L.P.

AUDUBON IN THE NORTH OF ENGLAND.

Audubon and His | Journals | By | **Maria R. Audubon** | with Zoölogical and other Notes by | **Elliott Coues** | With Thirty-seven Illustrations, including Three hitherto | unpublished Bird Drawings, and Ten | Portraits of Audubon | In two Volumes | Volume the First [Second] | London | John C. Nimmo | 14, King William Street, Strand | MDCCCXCVIII [Demy 8vo. Cloth, pp. xiv. + 532 + 22 plates, and pp. viii. + 554 + 24 plates].

These two handsome portly volumes are full of interest, graphic human interest, from cover to cover, and we are laid under deep obligation to Miss Maria Audubon for realising her dream of many years and giving to the world her father's journals in his own language. Partly the exigencies of space, partly the fact that American ornithology lies beyond our scope, prevent our being able to do more than briefly indicate the contents. The first volume includes a biography of Audubon, then his European Journals, 1826-1829, after which is given his Labrador journal of 1833, and the commencement of the Missouri River Journals of 1843. These are finished in the second volume, the remainder of which is occupied by what are called 'Episodes.' Which are a series of most interesting anecdotes, reprinted from the first three volumes of the 'Ornithological Biographies,' and including descriptions of scenery, animals, hunting scenes, manners and customs in America.

The illustrations are plentiful, and include numerous portraits of Audubon and of other members of his family, three hitherto unpublished drawings of birds, and at the end facsimiles of diplomas of election to various societies and academies.

Treating the work from our own restricted standpoint, we are naturally interested in his European Journals of 1826-1829, years employed by him in visiting the principal cities and towns of England, Scotland, and France in search of subscribers to his great work. Reading these, expressed in language originally intended for his wife's own eye, one obtains a vivid idea of the great American ornithologist and his flowing locks (which he had, much against his will, to 'sacrifice' when in Edinburgh), his vivacious and mercurial disposition, his occasional fits of depression, and his delight at the kindness shown him by the numerous friends he made.

Warmly does he speak of the reception given him on his first landing in Liverpool, by the Rathbones, Roscoes, etc., his initial disappointment at Manchester, and how nobly that city retrieved its character later on by its generosity in

subscribing. Visits to Edinburgh and Glasgow were followed by hospitalities at the hands of Selby at Twizell and of Captain Mitford at Mitford Castle. Then came his visit to Newcastle, and his meeting with the famous old woodcutter, Bewick, then in his 74th year, and with eye undimmed able to cut as well as at 20. This graphic picture of the old engraver in his cotton nightcap is perhaps as interesting as anything in the book, at all events to us who are of the north country. Visits to York and to Leeds, where he was well received by John Atkinson and by John Backhouse, who is described as 'a good ornithologist—not a *closet naturalist*, but a real true-blue, who goes out at night and watches Owls and Night-jars and Water-fowl to some purpose, and who knows more about these things than any other man I have met in Europe.' The number of towns in Great Britain visited by Audubon seems to have been very small. Liverpool, Manchester, Newcastle, York, Leeds, Edinburgh, Glasgow, London, are all. But one flying visit he made was inspired by conjugal affection, and on the 11th and 12th of October 1826 he visited Bakewell, the birthplace of the lady (Bakewell by name also) who, in becoming his wife, overcame a strong prejudice he originally entertained against everything English.

We can say but little more. It is not our province to estimate his influence on American ornithology, though the fact that Dr. Elliott Coues (whose notes add to the scientific value of the American portion of the book) in sketching out six epochs of American ornithology, characterised the period 1824-1853 as the epoch of Audubon, amply demonstrates that it was great; and it will suffice to commend these volumes to the perusal of our readers.

NOTE—CONCHOLOGY.

***Limnæa peregra* in Upland Tarns in Furness.**—Outside Ulverston on the N.W. lies Knott Hollow Tarn (vulgo North Hollow), at an elevation of some 600 feet above sea. It is divided by a wall-like structure into two tarns of which the higher is the larger and shallower. Until this dry season I have found few, if any, shells about its margin, but on a visit on 1st August *Limnæa peregra* Müll. was scattered all over the (at present) wide, soppy, stony stretch between the old high-water line and the new and restricted area of the upper tarn. It occurred in quantity, all the shells empty and in good condition.

In L. E. Adams' work on British Shells, second edition, 1896, the species is given as recorded in V.C. 69—Westmorland with N. Lancs. (*not* Furness; Watson never wrote that, surely, he knew better). Although I know nothing to prove it, there is an idea often present, that this and other common species have never been chronicled from this Furness portion of the area of North Lancs. Possibly it has from Coniston or the neighbourhood of the larger tarns, but unless properly located the question remains. Hence the reason for this note.—S. L. Petty, Ulverston, 1st August 1898.

Naturalist,

RECENT NOTES FROM NORTH LINCOLNSHIRE.

JOHN CORDEAUX, J.P., M.B.O.U., F.R.G.S.,
WITH THE ASSISTANCE OF
Miss M. LANE-CLAYPON, Miss FLORENCE H. WOOLWARD,
Rev. ALFRED THORNLEY, and Rev. E. A. WOODRUFFE-PEACOCK.

These lists have been compiled from several note-books and are the results of three days excursions on June 20th, 21st and 22nd, by a few friends, with one exception active members of the Lincolnshire Naturalists' Union. The starting point in each case was the house at Great Cotes.

June 20th. The party consisted of Miss Lane-Claypon, Miss Von Negenborn and myself. The localities were (by the kind permission of Lord Yarborough) the Pelham Pillar Woods, Croxby Lake, and a very extensive, and now disused, chalk-pit at Barnoldby-le-Beck. The weather was at first overcast and cloudy, with some rain, subsequently fine and bright. Amongst the birds observed were the Kestrel, Carrion Crow (many), Jay, Magpie, Wood Pigeon, Turtle Dove, Garden Warbler, Blackcap, Willow Wren, Coot, Water-hen and Duck (undetermined).

A few common sorts of butterfly and moths were taken, but it proved too early for those we were specially in search of, and which abound in two or three localities in the high woods. These are *Argynnis aglaia* and *Melanagria galathea*, and another Fritillary. After the Common Whites, the Orange-tip was the commonest on the wing, also the Small Heath and a Skipper.

June 21st. The party was made up of Miss Florence H. Woolward, Miss Lane-Claypon, the Reverends E. Adrian Woodruffe-Peacock and Alfred Thornley, and myself. The ground traversed was the Freshney Bogs in Great Cotes and Aylesby. Weather, showery to bright. The birds observed, omitting the common species, were the Kestrel, Carrion Crow (both old and young), Turtle Dove, Nightingale, Garden Warbler, Willow Wren, the Common and Lesser Whitethroats, the Reed, Sedge and Grasshopper Warblers, Reed Bunting, also nest with five eggs, Heron, Wild Duck.

June 22nd. The same party as on the previous day, by train to Gainsborough, and carriage to Scotton Common. Amongst the birds observed were the Bullfinch, Whinchat, Meadow Pipits, great number of Brown-headed Gulls with young strong on the wing, also fresh eggs in nests, Sheldrake (old and young), Shoveler, Teal, Redshank, Snipe,

Dunlin. The most interesting discovery made during the day amongst the birds was by Miss F. H. Woolward—two nests of the Snipe. In both cases these were placed in the centre of a tuft of grass, cup-shaped and rather deep, and lined with the dead leaves of *Poa pratensis*. I particularly mention these facts, as these two nests were more carefully and neatly constructed than usual. In the first the young had left the nest, leaving the internal lining with fragments of the egg-shell adhering. The second nest contained one addled egg, the young also, as in the previous case, having got off.

The following lists by the contributors, whose names appear at the head of this paper, will be found of much interest, as they contain many new things not hitherto recorded in the county of Lincoln.

Miss Lane-Claypon furnishes the following list of Plants:—

PELHAM PILLAR WOODS, ETC., 20TH JUNE 1898.

Helianthemum chamæcistus Mill.
Lychnis alba Mill.
Ononis repens L.
Fragaria vesca L.
Poterium sanguisorba L.
Ribes grossularia L.
Viscum album L.
Viburnum lantana L.
Galium saxatile.

GREAT COTES, 21ST JUNE 1898.

Thalictrum flavum L,
Ranunculus sceleratus L.
Lychnis flos-cuculi L.
Spergula arvensis L.
Hypericum perforatum L.
Rhamnus frangula L.
Trifolium hybridum L.
Anthyllis vulneraria.
Spiræa ulmaria L.
Spiræa filipendula L.
Geum urbanum L.
Rubus idæus L.
Epilobium parviflorum Screb.
Epilobium angustifolium L.
Hippuris vulgaris L.
Sanicula europæa L.
Sium latifolium L.
Œnanthe fistulosa L.
Angelica sylvestris L.
Scandix pecten-veneris L.
Viburnum opulus L.
Galium cruciata Scop.
Sherardia arvensis L.
Valeriana dioica L.
Dipsacus sylvestris Huds.
Eupatorium cannabinum L.
Solidago virga-aurea L.
Pulicaria dysenterica Gærtn.
Petasites officinalis Mænch.
Senecio aquaticus Huds.
Arctium minus Bernh.
Cnicus palustris Willd.
Hieracium pilosella L.
Tragopogon pratense var. minus L.
Hottonia palustris L.
Lysimachia vulgaris L.
Menyanthes trifoliata L.†

† I have known of the Bogbean in this district for thirty years, but have never seen it in flower before this summer, when Miss Lane-Claypon found it in bloom, and made a most beautiful water-colour drawing of the plant.

Myosotis palustris Relh.
Scrophularia aquatica L.
Veronica officinalis L.
Veronica beccabunga L.
Veronica anagallis-aquatica L.
Pedicularis palustris L.
Pedicularis sylvatica L.
Stachys betonica Benth.
Stachys palustris L.
Ajuga reptans L.
Polygonum convolvulus L.
Salix pentandra L.
Salix cinerea L.
Salix alba L.
Listera ovata R.Br.
Orchis maculata L.
Orchis mascula L.
Habenaria conopsea Benth.
Hydrocharis morsus-ranæ L.
Iris pseudacorus L.
Butomus umbellatus L.
Triglochin maritimum L.
Eriophorum vaginatum L.
Potamogeton crispus L.

Scotton, 22nd June 1898.

Anemone nemorosa L. (leaf).
Ranunculus flammula L.
Chelidonium majus L.
Reseda luteola L.
Polygala vulgaris L.
Hypericum elodes L.
Linum catharticum L.
Genista anglica L.
Hydrocotyle vulgaris L.
Drosera rotundifolia L.
Apium inundatum L.
Cnicus pratensis Willd.
Erica tetralix L.
Erica cinerea L.
Calluna erica DC.
Gentiana pneumonanthe L. (leaves).
Anagallis tenella L. (leaves).
Pinguicula vulgaris L.
Teucrium scorodonia L.
Humulus lupulus L.
Salix repens L.
Salix v. argentea and ascendens.
Narthecium ossifragum Huds.
Potamogeton polygonifolius.

List of Mosses taken at Scotton Common and determined by the Rev. S. Gasking, of Liverpool, and others.

Aulacomnium palustre L. Divs. 1, 2, 5, 7.
Hypnum cordifolium Hedw. D. 5.
Hypnum schreberi Ehrh. Divs. 2, 5, 7, 13.
Hypnum scorpioides L. Div. 5.
Hypnum stramineum Dicks. D. 5.
Sphagnum cuspidatum Ehrh. Divs. 2, 5.
Mnium hornum L. Ds. 2, 5, 7, 11, 13.
Tetraplodon mnioides Br. & Schpr. Div. 5.

This last moss was found by the Rev. A. Thornley, and Mr. L. J. Cocks, of Harrogate, to whom it was sent, writes:—'This I consider a very good and interesting find, for the species is decidedly montane. It is not recorded south of Yorkshire, and only there in hill districts. It grows on dung of *carnivorous* animals, or on decaying animal matter on peaty moors.' The universally common mosses are not recorded, but remain over till a full list comes out.

The following is a complete list of the Spiders taken at Great Cotes and immediate neighbourhood, Div. 4, and at Scotton Common, Div. 5. The Rev. E. Adrian Woodruffe-Peacock submitted them in tubes, just as they were taken,

to Rev. O. Pickard-Cambridge, who has kindly named them. The distribution has been added for the rest of the county when they have been taken before.

Epeira agalena Walck. Div. 4.
Lycosa amantata Clk. Divs. 2, 3, 4, 8, 15.
Argyroneta aquatica Bl. Divs. 2, 3, 4, 6.
Dictyna arundinacea L. Divs. 2, 3, 4, 5, 7.
Oxyptila atomaria Panz. Ds. 5, 8.
Philodromus aureolus Clk. Divs. 2, 3, 4, 5, 7, 8, 15.
Clubiona brevipes Bl. Divs. 3, 4, 5, 8.
Bathyphantes circumspecta Bl. Divs. 3, 4.
Epeira cornuta Clk. Divs. 3, 4, 7, 8, 9.
Xysticus cristatus Clk. Divs. 2, 3, 4, 5, 8, 15.
Epeira cucurbitina Clk. Divs. 2, 3, 4, 5, 7, 8, 15.
Erigone dautipalpis Wid. Div. 4.
Pachygnatha degeerii Sund. Divs. 3, 4, 8.
Theridion denticulatum Walck. Divs. 2, 3, 4, 8, 15.
Epeira diademata Bl. Divs. 2, 4, 5, 7, 8, 15.
Tetragnatha extensa L. Divs. 2, 4, 7, 8, 9, 15.
Pirata hygrophilus Thor. Div. 4.
Linyphia impigra Camb. Div. 4.
Lycosa nigriceps Thor. Divs. 2, 5, 8.
Chiracanthium nutrix Westr. Div. 5.
Bathyphantes parvulus Westr. Div. 4.
Trochosa picta Hahn. Divs. 5, 9.
Pirata piraticus Clk. Divs. 4. 9.
Theridion pulchellum Walck. Divs. 3, 4, 7.
Lycosa pullata Clk. Ds. 3, 4, 5, 7.
Pocadicnemus pumilus Bl. Div. 4.
Epeira quadrata Clk. Ds. 5, 7, 8, 9.
Theridion sisyphium Clk. Divs. 2, 3, 5, 7, 8, 15.
Leptyphantes tenuis Bl. Ds. 4, 15.
Clubiona terrestris Westr. Divs. 3, 4.
Clubiona trivialis Koch. Div. 5.
Xysticus ulmi Hahn. Divs. 4, 8.
Theridion varians Hahn. Divs. 2, 3, 4, 8, 15.
Zilla x-notata Clk. Ds. 3, 5, 8, 15.

Of the 130 species now recorded for Lincs. N. and S., 34 species have been taken in the Great Cotes neighbourhood, Div. 4, and on Scotton Common, Div. 5. Of the two spots, the former is much the richer from the point of view of the entomologist and arachnidist.

The Rev. A. Thornley, M.A., F.L.S., thus reports upon the Insects collected at Freshney Bogs (Great Cotes) and Scotton Common, both in Lincolnshire, on 21st and 22nd June 1898:-

Great Cotes and Freshney Bogs, 21st June 1898.

Lepidoptera.

Bombyx rubi L. (Fox Moth). One ♂.
Procris statices L. (The Forester). Quite common in the bogs and hay-fields. Locally known as 'Green Horsemen.'
Lomaspilis marginata L. One or two examples in the willow holts.
Adela degeerella L. One example of this very beautiful insect occurred.

Neuroptera.

Sialis lutaria (Otter Fly). Common by the river banks.
Panorpa vulgaris (Scorpion Fly). Common.

Naturalist,

Pyrrhosoma minium. A beautiful red dragonfly. Quite common.
Agrion puella. The common slender blue dragonfly.

DIPTERA.

Stomoxys calcitrans L. A common fly everywhere.
Calliphora erythrocephala Mg. Common large 'Blue-Bottle.'
Polietes lardaria F. Common.
Lucilia cæsar L. (Green-Bottle). Common.
Morellia hortorum Fln. Common.
Syritta pipiens L. Common.
Chrysogaster hirtella. ♀s common; ♂s not so common.
Chilosia species.
Platychirus peltatus Mg. One ♀.
Platychirus scambus Stœg. Several.
Tropidia milesiformis Fln. Not uncommon.
Xylota segnis L. One ♂.
Leptis scolopacea L. Many ♂s, but only one ♀.
Leptis tringaria L. One ♀.
Empis tesselata F. Common.
Empis livida L. Common.
Empis spec. (?). One example.
Chrysopilus aureus Mg. Very common in the bogs.
Sarcophaga carnaria L. (The Flesh Fly). Common.
Hyetodesia incana W. One ♂.
Hydrotæa irritans Fln. Common.
Tetanocera sylvatica Mg. Common in the bogs.
Tipula gigantea Schrk. One example.

There are several other species of Tipulidæ and some other Diptera not yet determined.

HYMENOPTERA.

ACULEATA.

Andrena wilkella Kirby. One ♂.

TENTHREDINIDÆ (SAW FLIES).

These were unusually abundant; and I have still several undetermined species.
Dolerus gonager. One ♀.
Dolerus æneus Htg. One.
Allantus arcuatus. One example of var. nitidior, and one type.

COLEOPTERA.

Ilybius fuliginosus F. Two. Blow wells in the bogs.
Brychius elevatus Pz. One. In the river.
Corymbites tesselatus F. Two.
Athöus hæmorrhoidalis F. Common.
Agriotes pallidulus Ill.
Telephorus rusticus Fall. Common.
Telephorus lividus L. Common.
Telephorus lituratus Fall. Common.
Telephorus pellucidus F. Two.
Telephorus paludosus Fall. A northern and mountainous species.
Telephorus bicolor F. Common.
Telephorus flavilabris F. Common.
Ragonycha testacea L. Two. A local species.
Ragonycha limbata Th. Common.
Malachius bipustulatus L. Common.
Cyphon variabilis Thun. A few.
Donacia sericea L. Common.
Donacia simplex F. One.
Lema lichenis Volt. Common.
Lema melanopa L. One.
Cryptocephalus exiguus Schmied. = wasastjernæ Gyll. Two examples. A very rare species. Apparently only taken by the late Dr. Power in Horning Fen, Norfolk.
Chrysomela polita L.
Gastroidea polygoni L.
Phædon cochleariæ F. One or two.
Phyllodecta vulgatissima L. One example.
Phyllodecta vitellinæ L. Common.
Hydrothassa marginella L. One or two.
Prasocuris junci Brahn. Several on Veronica beccabunga.
Prasocuris phellandrii L. One example.
Galerucella lineola F. Abundant.

Galerucella nymphææ L. One example.
Crepidodera transversa Marsh. Common.
Crepidodera aurata Marsh. Common.
Cryptorrhynchus lapathi L. One example.
Limnobaris T-album L. Several.
Phyllobius oblongus L. Common.
Phyllobius urticæ DG. One example.
Phyllobius viridicollis F. One example.
Apion humile Germ. Common.
Apion violaceum Kirby. A few examples.
Gymnetron labilis Herbst. One example. A local species.
Erirhinus acridulus L. Several.
Dorytomus maculatus Marsh. A few.
Sciaphilus muricatus F. One example.
Hypera suspiciosa Herbst. One example.
Hypera alternans Steph. A couple. A local species.
Balaninus salicivorus Payk. One example.
Cœliodes quadrimaculatus L. Several.
Meligethes æneus L. Common.
Subcoccinella 24-punctata. Common.
Mycetophagus bipustulatus. One example.
Psylliodes cuprea Koch. One example.
Psylliodes picina Marsh. One example.
Xantholinus linearis. One example.
Anaspis frontalis L. Several.

Hemiptera-Heteroptera.

Miris calcaratus. Two examples.
Rhopalotomus ater. A few examples.
Cercopis sanguinolenta (The Scarlet Hopper) was common amongst rushes in the bogs.

Scotton Common, 22nd June 1898.

Lepidoptera.

Euchelia jacobææ L. Cinnabar Moth. One example.
Arctia caja L. The Tiger Moth. One larva.
Anarta myrtilli L. One example.
Panagra petraria Hb. One example.
Ematurga atomaria L. Not uncommon.

Diptera.

Sphærophoria picta Mg. Three ♂s.
Syritta pipiens L. One example.
Hilara maura F. Several.
Leptis scolopacea L. One ♀.

Hymenoptera.

Aculeata.

Bombus agrorum Schmied. = muscorum L. Three ♀s.
Ammophila lutaria Fab. One ♂.

Tenthredinidæ.

Tenthredo viridis. Three ♀s; one ♂.
Tenthredopsis coqueberti Klug. One ♀.
Dineura viride-dorsata. One ♀.

Coleoptera.

Timarcha violaceo-nigra DG. One example.
Cryptocephalus labiatus L. A few examples from birch.
Luperus rufipes Scop. Common on birch.
Dolopius marginatus L. One example.
Ceuthorrhynchus ericæ Gyll. One example.
Cœliodes rubicundus Herbst. Two examples from birch.
Anoplus plantaris Naez. Common on birch.
Rhynchites betulæ L. Common on birch.

Miss Florence H. Woolward's list of Shells, taken at Great Cotes and in the Freshney Bogs, 21st June 1898.

Helix aspersa.
Helix nemoralis.
Helix arbustorum.
Hyalinia nitidula.
Planorbis spirorbis.
Succinea putris.
Arion ater.
Arion hortensis.
Agriolimax agrestis.

Additional and supplementary list of Insects taken in the Freshney Bogs by the Rev. Alfred Thornley and Mr. Cordeaux on 13th July. This was a fairly favourable day; as a rule bright sun, but the wind was north and decidedly cool.

Where the bog was sheltered by an adjoining plantation, the long coarse vegetation swarmed with the Meadow Brown and the Ringlet Butterflies, and the tops of the marsh thistles carried extraordinary numbers of the brilliant Burnet moth, as many as ten to twelve clustering on a single head. Only one Forester (*Procris statices*) was seen, where a fortnight previously this moth had been abundant.

Report on additional insects taken in the Freshney Bogs, Great Cotes, Lincolnshire, on 13th July 1898:—

LEPIDOPTERA.

Epinephele janira (Meadow Brown). Common.
Epinephele hyperanthus (Ringlet). Common.
Zygæna trifolii (5-spot Burnet). Very abundant.
Zygæna filipendulæ (6-spot Burnet). One or two.
Smerinthus populi. One larva (very young).

HYMENOPTERA.

Trypoxylon attenuatum. Two examples.

DIPTERA.

Chrysotoxum bicinctum. One example.
Nemotelus uliginosus. Several.
Chloromyia formosa. Several.
Chrysops cæcutiens. Two or three.
Hæmatopota pluvialis (The Clegg). Common.

COLEOPTERA.

Hydroporus planus. Several.
Agabus paludosus. One example.
Agabus bipustulatus. Three or four examples.
Deronectes depressus. Two examples.
Elmis æneus. Three or four examples.
Cercus rufilabris. Several.
Coccidula rufa. Several.
Polydrusus cervinus. Two examples.
Apion ervi. Three or four examples.
Orchestes salicis. Common.
Ragonycha fulva. Common.
Helodes minuta. One example.
Telephorus pellucidus. One example.
Malthinus punctatus. One example.
Leistus ferrugineus. Three examples.
Helophorus aquaticus. One example.

Six more examples of the rare *Cryptocephalus exiguus* were swept in a little bog. *Ragonycha testacea* and *Crepidodera picina* occurred again. Mr. Thornley has also several insects not yet identified.

September 1898.

NOTE—FUNGI.

Microfungi of Cumberland.—In looking over some memoranda the other day, I found the following records. The first is curious, as I had quite forgotten it when I sent my last note.

1. The Box-tree Disease (*Puccinia buxi*) found among a bouquet of flowers on sale in the Carlisle market.

2. The Sedge-Smut (*Ustilago caricis*) found by Mr. Postgate on one of the sedges near Carlisle.

3. The Burnet-saxifrage Blight (*Æcidium pimpinellæ*) in the form of cup, Carlisle.

These records relate to the year 1894. The late Dr. Carlyle did much in this branch of science, but I fear his records have never yet been placed at the service of 'The Naturalist.'—HILDERIC FRIEND, Ocker Hill, Tipton, 6th June 1898.

NOTE—MAMMALIA.

Yorkshire Mammals Wanted.—I am sorry to say that the appeal for specimens of the smaller Mammalia, especially Bats, issued by Messrs. Denison Roebuck, J. Backhouse and myself, has not met with that response that we hoped for. We shall be very greatly obliged if those naturalists who do take an interest in the Vertebrata, and also those who do not, will try themselves, or get some enterprising friend to assist them, to obtain a few specimens for us, as we wish to work out the detailed distribution. Bats are found in holes in trees, in church towers, behind signboards, shutters, etc., and in caves; they are easily shot on the wing in the evening. We want to see specimens of Leisler's Bat, the Lesser Horse-Shoe Bat, which occurs in the Ripon district, and Daubenton's Bat, which flies over the water, pond, lake or river, in the evening. Specimens of the Lesser and Water Shrews are desired, especially the dark variety of the latter. The variety of the Longtailed Field Mouse known as *Mus flavicollis*, and the true Harvest Mouse, whose occurrence in Yorkshire is involved in some mystery, and any varieties, albinisms or melanisms, of any of the Mammalia, especially Moles, white, sandy, piebald or spotted. Carriage of any of them will be gladly defrayed. Our thanks are due to Mr. Clayton, of Grimston Park, for several Noctules; to Mr. Hawkins, of Micklegate, York, for a Whiskered Bat; to Mr. Parkin, of York Street, Wakefield, also for a Whiskered Bat, killed at Ripon; and to Prof. J. W. Carr, for a Nottinghamshire example of the Noctule.—OXLEY GRABHAM, M.A., M.B.O.U., Chestnut House, Heworth, York, 12th August 1898.

NOTES AND NEWS.

At the anniversary meeting of the Geological Society on 18th February the proceeds of the Wollaston Donation Fund were presented to Mr. E. J. Garwood, M.A., who is well known for his researches on the fossil-zones of the Mountain Limestone, the concretions of the Magnesian Limestone, and other geological work in the North of England. The Murchison Geological Fund was awarded to Miss Jane Donald, of Carlisle, in recognition of her work on the Carboniferous Gasteropoda.

At the same meeting, the well-known North Country geologist, Mr. J. E. Marr, F.R.S., retired from the secretaryship of the Society after ten years service. Mr. R. S. Herries, one of the newly-elected secretaries, is a Yorkshire geologist.

Among recently-elected Fellows of the Geological Society, are Messrs. E. L. Allhusen, Chathill, Northumberland; W. R. Baldwin-Wiseman, Chorlton-cum-Hardy; W. Edwards, Crewe; F. C. Harrison, Silcoates Hall, Wakefield; and Rev. J. Hawell, Ingleby Greenhow.

ACKWORTH BIRDS.

Ackworth Birds, | being | a List of Birds of the district of | Ackworth, Yorkshire. | By | Major **Walter B. Arundel,** late 2nd Vol. Batt. York and Lanc. Regiment. | [Publisher's monogram] | London: | Gurney & Jackson, 1 Paternoster Row. | (Successors to Mr. Van Voorst.) | MDCCCXCVIII. [Small 8vo, cloth, pp. viii + 105].

It is a very great pity that this list has been so carelessly compiled, for it is almost entirely a résumé of the work and observations of others. In competent hands a most readable volume might have been produced, for before the districts of Pontefract, Tanshelf, Purston, and Featherstone became so populous, the area was rich in bird life, and though Mr. Arundel includes these in his district, the information he gives concerning them is of the scantiest, though there was ample material at hand to work from; as it is, the errors of commission and omission, especially the latter, are so numerous as to render the work utterly valueless as a volume of reference. To deal with these errors seriatim et verbatim :—

On page 20 Mr. Arundel states that he only knows of one nest of the Corn Bunting having been found in the district. It used to breed regularly in my father's hayfields up the Featherstone Lane, and I have a clutch of eggs now in my collection that I took from that locality. On page 21 it is stated that the Reed Bunting generally places its nest in 'the side of a tuft of rushes.' I have far more frequently found it in dead and broken clumps of reed and sedge, the rank undergrowth in willow beds, small bushes, and hedges. On page 30 it is stated that the Kingfisher has not been heard of as occurring on Hemsworth Dam. The late Mr. Edmund Leatham, of Wentbridge, told me that he had frequently seen it there. I entirely demur to the statement, page 30, that the Barn Owl is the commonest Owl in the district. I have found the Long-Eared Owl far and away the most numerous. It used almost to swarm in the Went and Thorpe Woods, the Barn and Tawny being about equal in numbers. My father had a bird of the latter species, taken out of Darrington Church, which lived in his possession for twenty-one years. The Little Grebe, though not given as such, is most certainly a resident all the year round, and, in my experience, its numbers are considerably augmented in the winter. I could have shot lots of them had I been so minded at that season. My father at one time had the shooting rights over Mr. Watson's farm at East Hardwick, and he often used to see them there. I have also seen them in winter on Mr. Fearnley's pond at Purston,

of which we had the fishing for many years. Mr. Arundel mentions the bird under Summer Residents, but does not give the name 'Tom Pudding' by which it is usually known in the district. Page 47: The Blackcap used to breed regularly in the gooseberry bushes in my grandfather's orchard at Friar Wood. Though I have examined scores of Garden Warbler's eggs, I never saw or heard of a red type, like that which occurs in the case of the Blackcap. Page 51: No mention is made as to the breeding of the Yellow Wagtail. I have found the nest with young at Wentbridge, and I have some eggs which were given me some years ago by Mr. William Robson, of Pontefract, taken at Carleton. On page 59 Mr. Arundel states that in Yorkshire the Turtle Dove is considered very uncommon. I know of at least a dozen breeding places of the bird, and, as I have recently pointed out in 'The Zoologist,' it has extended its range greatly of late years. Page 64: No occurrence is said to be known of the Teal having stayed to breed. Though I never actually found the nest, I have seen a brood three or four days old on the river near Wentbridge. Page 67: Though I never found the nest of the Wheatear in the district, I once caught a young bird unable to fly on the sandy hill-side, where there are a lot of rabbit holes, of the road leading from Carleton to Wentbridge. On page 73 it is stated that the Snow Bunting has generally occurred in pairs. I have always noticed it in flocks, sometimes of considerable size, and in the memorable winter of '80-81 I caught five in a sieve trap in our garden at Pontefract, two of which are in my collection. Page 74: I have found the Green Woodpecker nesting in Thorpe Plantation and in Brockendale. On page 76 it is stated that only one occurrence of the Short-Eared Owl is known of. I have shot several. For many years my father had the shooting rights over all the park farms, beginning at the park gates and running all the way on both sides of the lane up to Featherstone, and across the L. & Y. railway up to the Halfpenny Lane. On the farm at that time occupied by Mr. Wilton there was a small plantation with a stream running through it—often a sure find for a Woodcock—and I once shot this Owl there, and have put up others, but as my father did not like my brother or myself to shoot Owls or Hawks, we used to spare them. I have also put them up out of turnips when partridge shooting on the park farms in October.

The enormous migration of Black Terns observed at Hemsworth Dam, as mentioned by Mr. Arundel, and estimated at over a thousand birds, interests me very much. I knew that

a few had been seen there and also at Wintersett, but a migration of this magnitude seems to be quite a new phenomenon, and I hope all being well to go down and observe the same myself next spring.

Now to deal with the omissions. Twenty different species of birds that have occurred in the district are not mentioned by Mr. Arundel. (1) The Dipper. I have seen a single bird when fishing at Wentbridge, and Mr. Edmund Leatham told me that he once saw a pair. (2) The Mealy Redpoll I have shot on the fields bordering the Halfpenny Lane, and (3) the Twite on Mr. Wilton's farm, and the land at one time farmed by the late Mr. Edward Muscroft. (4) The Peregrine Falcon was observed by my father and Mr. Edmund Leatham when shooting at Hemsworth Dam. It made several stoops at duck and they took it to be a young bird. I, myself, once saw a fine mature female in the Went Vale. In the great winter of '80-81 the late Mr. Benjamin Stringer, the Pontefract taxidermist, had (5) two Cormorants brought in that were shot between East Hardwick and Wentbridge. In the same winter—so prolific in wanderers—at daybreak one morning, on the park farms, I fired into a skein of (6) White-Fronted Geese, flying very low in the frosty fog, and secured one. My father, when he had the shooting on Mr. Watson's farm at East Hardwick, shot there (7) a female Shoveller, and also (8) a female Garganey, and Mr. Edmund Leatham told me that he had seen, and I think shot, the latter on the river at Wentbridge. In September '88, the year of the great irruption of (9) Pallas' Sand-Grouse, I saw a small flock of six feeding in a field in the occupation of the late Mr. George Kellet, not many hundred yards above Tanshelf Station. I stalked them for some time but they were very wild, and at last I gave them both barrels at about eighty yards distance, but failed to stop any of them. I never saw or heard anything of them again, though I searched most diligently, but the same autumn a few were seen by a competent observer on a farm at Hemsworth belonging to the late Mrs. Hall, of Purston Hall, and at that time in the occupation of Mr. Ellis. Mr. Stringer several times had (10) the Spotted Crake brought in, and I had a specimen brought to me, killed by the telegraph wires between Tanshelf and Monkhill Stations. I once shot (11) a young Grey Plover on the farm at that time occupied by Mr. Gott. It was with a small trip of Golden, of which at times there used to be considerable numbers, and the late Mr. Broadhead, the gunsmith, of Pontefract, once shot another.

Before Purston and Featherstone became such densely-populated centres, Mr. Fearnley's pond and the stream running behind where now the sewage farm stands used to be sure finds for several species of Waders at the autumnal migration. I have seen the Dunlin, Green Sandpiper, Common Sandpiper, (12) Ringed Plover, and (13) Greenshank there, and as I was often fishing the pond and shooting down the fields by the stream side with my friend Mr. Percy Hall, late of Purston Hall, I had ample opportunities of observing them. My father once shot (14) a Great Snipe, the only one that I ever heard of in the district. It got up in a field of potatoes on Mr. Wilton's farm, close to the fence, and my father, who was an excellent shot, either had to take it as it went over or let it go altogether. He nearly blew it to pieces with No. 5 shot, but the sixteen tail feathers and large size enabled us to identify it. Mr. Stringer had a case of (15) beautiful Ruffs in full breeding plumage, several of which had been got in the Pontefract district, though, with the exception of two, which I have often heard him say were got between Carleton and Wentbridge, I cannot say that they were obtained within the area treated of by Mr. Arundel. At the sale of the late Mr. Greaves' effects, of Carleton Grange, I made enquiries about this case with a view to purchase, but unfortunately it could not be traced, and I do not know what has become of it. (16) The Whimbrel I have heard at the spring and autumn migration passing over our garden at Pontefract, uttering its well-known cry. (17) The Arctic Tern I have seen in the spring at Wentbridge, and though not in the prescribed district, I have seen it when fishing the Wintersett reservoirs, but never so numerous as the Common Tern. In the often-mentioned winter of '80-81, I shot (18) an immature Lesser Black-backed Gull out of a small flock on Mr. Wilton's farm, and in the same winter, Mr. Stringer had (19) one or two Little Auks, got between East Hardwick and Wentbridge and at Purston. Also at the same time (20) a beautiful Little Gull, which I remember his exhibiting to me, when stuffed, with great pride, and which was got somewhere near East Hardwick. An authentic list of the birds of the district has yet to be written.

OXLEY GRABHAM, M.A., M.B.O.U.

NOTES AND NEWS.

We have not before had the space to note the decease at the early age of 49 of Mr. Edward Wilson, F.G.S., who was for fourteen years curator of the Bristol Museum, formerly a successful science teacher at Nottingham, and in 1888 the recipient of the Murchison Geological Fund.

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Papers and records published with respect to the Natural History and Physical Features of the North of England.

GEOLOGY AND PALÆONTOLOGY, 1893.

THE present instalment has been compiled and edited by

THOMAS SHEPPARD.

Grateful acknowledgment for assistance rendered is due to Mr. W. Denison Roebuck, F.L.S., and Mr. Alfred Harker, M.A., F.G.S.; especially to the latter gentleman, who had already prepared by far the greater part of the following particulars before the present compiler took the work in hand. He will be glad to receive particulars of papers, etc., omitted from the present list. These will be published at the head of the 1894 bibliography in the same way as the papers omitted from previous lists appear at the commencement of the present instalment. Every effort will be made, however, to ensure these lists being as complete as possible.

The lists for 1894-1898, will be published as soon as possible, and it would render them more complete if editors of periodicals, secretaries of societies, and especially authors of papers in local journals, etc., would send copies to the editor of this journal at 259, Hyde Park Road, Leeds. Reprints and authors' separate copies should bear the name of the publication, the number of the volume or part, the *original* paging, and the *actual date* of publication.

Previous instalments of the Bibliography of Geology and Palæontology have appeared as follows:

For 1884, in 'Naturalist,'		Dec. 1885, pp. 394-406.
,, 1885,	,,	Nov. 1886, pp. 349-362.
,, 1886,	,,	June 1888, pp. 178-188.
,, 1887,	,,	Feb. 1889, pp. 61-77.
,, 1888,	,,	April-May 1890, pp. 121-138.
,, 1889,	,,	Nov. 1890, pp. 339-350.
,, 1890,	,,	Oct.-Nov. 1891, pp. 313-330.
,, 1891,	,,	July-Aug. 1892, pp. 219-234.
,, 1892,	,,	Sept. 1893, pp. 265-279.

The Watsonian vice-counties are adopted throughout these bibliographies as more convenient and uniform in extent than the political counties; those comprised within the North of England are the following:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.;

62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness and Cartmel; 70, Cumberland; and 71, Isle of Man; with their adjoining seas.

1884.

T. G. Bonney. Cheviotland.

On some Specimens of Lava from Old Providence Island [and comparisons made with Andesites from the Cheviot region]. Mineralog. Mag., July 1884, vi. 39-45.

Daniel Clague. Isle of Man.

"The Geology of the Isle of Man," [discussed; abstract only of paper]. Trans. Liverp. Geol. Ass., Vol. 4, Session 1883-84, pp. 78-82.

James W. Davis. York S.W.

Geological Evolution [discussed, with illustrative references to the detritus-carrying power of the River Calder]. Nat. World, Jan. 1884, pp. 4-6. [The Yorkshire strata noted, and correction made as to the Calder]. Nat. World, Feb. 1884, pp. 21-23.

Isaac E. George. Derbyshire, York Mid W.

"On the Denudation of Limestone" [discussed from observations made in Craven and Derbyshire]. Trans. Liverp. Geol. Ass., Vol. 4, Session 1883-84, pp. 23-29.

R. T. Manson. Durham.

Zig-zag Ramblings of a Naturalist [near Darlington; including chapters entitled 'Pebbles from the Rock Well' (p. 3), 'At Low Coniscliffe Gravel Beds' (pp. 7-14), 'On the Merrybent Railway' (p. 28), 'At "Hell Kettles"' (p. 47), 'The Tees' (p. 108); at pp. 150-1 are given lists of the Fossil Reptiles (3), Fishes (13) and Mollusca, etc. (19), of the marl, slate and compact limestone at Thickley and Middridge Quarries, near Shildon]. Small 8vo., pp. 159. Darlington: Printed at the 'Times' Office. 1884.

Charles E. Miles. Derbyshire.

Mineral Springs [their origin and nature discussed; references to examples at Buxton, Bakewell, Stony Middleton, etc.]. Trans. Liverp. Geol. Ass., Vol. 4, Session 1883-4, pp. 47-59.

Isaac Roberts. Cheshire, Lanc. W. and S.

"The Properties of Triassic Sandstone" [discussed; illustrative references to Lancashire and Cheshire]. Trans. Liverp. Geol. Ass., Vol. 4, Session 1883-84, pp. 61-68.

A. Strahan. Lanc. S., Cheshire.

The Geology of Cheshire [relates principally to Cheshire, and the deposits of salt in the Red Marl, but the Millstone Grit, Coal Measures, Bunter, Keuper, and the Drift in the country around Liverpool are referred to, and much information given with regard to the Coal Measures]. Journ. of Iron and Steel Institute for 1884, p. 352.

Thomas Ward. Cheshire.

"The Subsidences in the Salt Districts of Cheshire, and their Geological Cause" [discussed in detail]. Trans. Liverp. Geol. Ass., Vol. 4, Session 1883-84, pp. 37-46.

1885.

Anon. [not signed]. Westmorland, Cheshire, Lanc. S.

[Field Meetings at Birkenhead (glacial drift exposures) and Wansfell Pike (action of torrents)]. Trans. Liverp. Geol. Ass., Vol. 5, Session

1884-85, p. 47. [Reports of Field Meetings held at Hightown (sand-dunes, peat-beds), St. Helens (Coal Measures), Kirkby Moss (peat sections), and Thurstaston (faults in the Trias)]. Id., pp. 74-75.

L. C. MIALL. YORK S.W.

The | Leeds Philosophical and Literary | Society. | = | Description | of the remains of Megalichthys | in the Leeds Museum. | By | Prof. L. C. Miall. | — | Price Sixpence. | — | Leeds: | Printed by McCorquodale & Co. Limited. | — | 1885. [8vo., paper, 16 pages; describes and figures a nearly complete specimen found in the roof of the Halifax Hard Bed at Idle, near Leeds].

1886.

ANON. [not signed]. LANC. W. AND S.

[Report of Field Meeting held] Easter Monday, April 26th, 1886 [at Broxton; sections in Bunter Sandstones and copper mines visited]. Trans. Liverp. Geol. Ass., Vol. 6, Session 1885-6, pp. 51-52. [Report of Field Meeting on] Whitmonday, June 14th, 1886 [to Carnforth; glacial geology, hematite mine, etc.]. Id., p. 61. [Report of Field Meeting on] September 10th, 1886 [at the 'Potatoe Delph' Colliery at Lea Green]. Id., p. 76.

HERBERT FOX. 'YORKSHIRE.'

Strontium and its Minerals [with note that it 'occurs in Yorkshire']. Trans. Liverp. Geol. Ass., Vol. 6, Session 1885-86, p. 64.

W. B. GALLOWAY. YORK S.E.

The 'Chalk and Flint Formation | its origin | in harmony with a very ancient and 'a scientific modern theory of the | world illustrated by facts and specimens | By | W. B. Galloway, M.A. | . . [Refers to the Yorkshire Chalk; illustrated by 5 photos of 'A Bean Pod, small Bulbous Root, Gourd, and Pear or Fig not fully grown, all in flint,' (!) etc.] London | Sampson Low, Marston, Searle, & Rivington | . . | 1886 | . . . [8vo., pp. four unnumbered + 1 to 44 + 5 photographs].

S. GASKING. LANC. S.

The Geology of St. Helens [describing the Lower, Middle, and Upper Coal-Measures, Permian, Trias and the Drift Deposits which cover the strata around St. Helens]. Proc. Isle of Man Nat. Hist. and Antiq. Soc., 1886 [not seen; title taken from Morton, Proc. Liverp. Geol. Soc., 1890-91, Vol. 6, Part 3, p. 308].

H. H. HIGGINS. LANC. S.

Fossil Insects from the Coal Measures, Ravenhead, St. Helens, 1870 [a brief general account, with no specifications of even the orders to which the insects belong]. Proc. Lit. and Phil. Soc. Liverp., for 1885-86, publ. 1886, pp. liv.-lv.

JOHN W. JUDD. NORTHUMB. S., DURHAM, YORK N.W. AND N.E.

On the Relations between the Solution-planes of Crystals and those of Secondary Twinning; and on the Mode of Development of Negative Crystals along the former. A Contribution to the Theory of Schillerization [refers at p. 87 to the solution-planes of Augite in the Whin-sill]. Mineralog. Mag., Dec. 1886, vii. 87.

T. B. PURSELL. YORK S.W.

Bottled Sunshine [a general account of the Origin of Coal, with a photograph of 'The most beautiful thing in the world' (the well-known fossil tree with roots found at Clayton, Yorks.) on the cover]. 8 pp. Exeter [No date. ? 1886].

T. M. READE. LANC. S.

On a Section of the Trias at Vyrnwy-street, Everton, displaying Evidence of Lateral Pressure [describes contorted surface of Bunter Sandstone, due to Rock movement before the denudation of Triassic beds]. Proc. Liverp. Geol. Soc., vol. 5, 1886, p. 158.

W. WHITAKER. ALL THE MARITIME COUNTIES.

Chronological List of Works on the Coast-Changes and Shore-Deposits of England and Wales [with index of authors and places; appended to Topley's Report on Sea-Coast Erosion]. Rep. Brit. Ass. for 1885; pp. 39-65 of reprint.

1887.

S. A. ADAMSON. YORK MID W. AND S.W.

Recent Discoveries of Carboniferous Vegetation in Yorkshire [Describes various finds of fossil trees, etc., in the sandstone at Clayton, Ilkley, and other places]. 8vo. Leeds, 1887, pp. 1-8; being reprint with slight alterations and title and pagination altered, from Trans. Leeds Geol. Ass., Part 2, 1885-6, pp. 71-75.

ANON. [signed 'T.E.D.']. 'YORKSHIRE.'

A Ramble on a Yorkshire Moor [not specified; brief notes on millstone grit, coal measures, finding of *Aviculopecten papyraceus*]. Nat. World, July 1887, pp. 119-122.

ANON. [not signed]. LANC. S., CHESHIRE.

Field Meeting [at St. Helens, conducted by S. Gasking]. Trans. Liverp. Geol. Ass., Vol. 7, Session 1886-87, p. 55. [Various other geological field meetings briefly reported; Chester, Hilbre Island, Leasowe, Green Lane, Thatto Heath]. Id., pp. 67, 75, 102.

ANON. [not signed]. LANC. S.

Glacial Contortions [as observed at Thatto Heath, Green Lane, and the Moorhey Cutting]. Trans. Liverp. Geol. Ass., Vol. 7, 1886-87, p. 102.

D. CLAGUE. YORK N.E. AND S.E.

Hints for Holidays [describing briefly the Geology of the Yorkshire Coast, North and South of Scarborough]. Trans. Liverp. Geol. Ass., Vol. 7, Session 1886-87, pp. 63-64.

J. J. FITZPATRICK. DERBYSHIRE.

Some Uses of the Carboniferous Limestone [giving particulars of the thermal waters and the geology of the Buxton district]. Proc. Liverp. Geol. Soc., Vol. 5, Part 3, 1887, pp. 259-261.

I. E. GEORGE. CHESHIRE.

Notes on Some Weathered Rocks at Hilbre [studies in marine erosion]. Trans. Liverp. Geol. Ass., Vol. 7, Session 1886-87, pp. 92-94.

A. H. GREEN. NORTHUMBERLAND S., CHEVIOTLAND, DURHAM.

The Geology of Northumberland and Durham [being review of G. A. Lebour's Outlines of the Geology of Northumberland and Durham, 1886]. Nature, 28th July 1887, pp. 289-290.

OSMUND W. JEFFS. CHESHIRE.

"The Geological History of Storeton Quarry" [abstract; describing sections in the 'Building Stones' division of the Lower Keuper; the Paper is illustrated by photograph of "Footprints of Labyrinthodon (*Cheirotherium storetonense*), from the Keuper Sandstone of Storeton, Cheshire]. Proc. Liverp. Science Students' Ass., Session 1886-7, reprint, 5 pp.

OSMUND W. JEFFS. CHESHIRE.

"Geological Note on the Bromborough Excursion" [of the Liverpool Science Students' Association; abstract; describes sections in the Upper Bunter]. Proc. Liverp. Sci. Students' Ass., Session 1886-7; p. 7. of reprint,

H. T. MANNINGTON. DURHAM, ISLE OF MAN, CUMBERLAND, DERBYSHIRE, NOTTS.

Notes on the Action of Water in Regard to Mineral and Rock Formation [a full abstract; notes from Isle of Man, Nottingham, millstone

grit of Grimshaw and Houghton's Delph, Cumberland, Sunderland, Derbyshire, etc.]. Trans. Liverp. Geol. Ass., Vol. 7, Session 1886-87, pp. 44-50.

J. J. H. T[EALL]. YORK N.E.

[Footnote to a review; with mention of the Mineralogical Structure of Oolitic Cleveland Iron Ore]. Mineralog. Mag., Dec. 1887, vii. 236.

1888.

G. E. COKE. NOTTS.

On a "Dumb-Fault" or "Wash-out" in the Deep Hard Coal at Coton Park and Denby. Pamphlet, 1888 [not seen; teste J. W. Carr, 1893].

YORK MID W., N.W., S.W., WESTMORLAND, DERBYSHIRE,
ARTHUR H. FOORD. NORTHUMBERLAND S., LANC. S. AND W., CUMBD.

Catalogue of the Fossil Cephalopoda in the British Museum (Natural History). Cromwell Road, S.W. — **Part I.** Containing part of the suborder Nautiloidea, consisting of the families Orthoceratidæ, Endoceratidæ, Actinoceratidæ, Gomphoceratidæ, Ascoceratidæ, Poterioceratidæ, Cyrtoceratidæ, and Supplement. — By Arthur H. Foord, F.G.S. London: Printed by order of the Trustees. 1888 [8vo., cloth, pp. xxxi. + 344, with woodcuts; the northern notes concern *Orthoceras marloense* Phill., Kendal; *O. perversum* Blake, Kendal; *O. mocktreense* Sowb., Benson Knot, Kendal; *O. bullatum* Sowb., Hutton-i'-th'-Hay, Benson Knot, End Moor, near Milnthorp, and Kendal; *O. ibex* Sowb., Benson Knot, Kendal; *O. cylindraceum* Flem., near Matlock (?); *O. pyramidale* Flem., Chipping, near Preston, Lancs.; *O. inæquiseptum* Phill., Bolland, Yorkshire; Ell Bolton; *O. cinctum* Sowb., Bolland, Yorkshire; *O. reticulatum* Phill., Bolland, Yorkshire; *O. sulcatum* Flem., Bowes and Todmorden, Yorkshire; *O. angulare* Phill., Bolland; *O. gesneri* (Martin), Bolland; *O. unguis* Phill., Bolland; *O. lævæ* Flem., Redesdale, Northumberland; *Actinoceras giganteum* (Sowb.), Bolland, Yorkshire; near Caldbeck, Cumberland; Newbery, Derbyshire; *A. striatum* (Sowb.), Chipping, near Preston, and Bolland, Yorkshire; *A. sowerbyi* (M'Coy), Scaleber, near Settle (type of *A. undulatum* (Sowb.)), and Bolland; *A. breynii* (Martin), Bolland, and Derbyshire?; and *Poterioceras fusiforme* (J. de C. Sowb.), Bolland, Yorkshire].

C. POTTER. LANC. S.

Antiquities of the Meols Shore [supposing that the deposition of the 'Scrobicularia bed' was in very early Palæolithic times; describes the trees in the old forest beds as associated with peat and plants of lacustrine growth, and refers to the trees having been transported into the peat in the state in which they are now found, whilst the peat was forming; refers to evidence of man's handiwork extending from the early Neolithic period to late Norman; concludes with reference to the supposed catastrophe in the Norman period, and states that 'in the lapse of time man again appears on the scene']. Trans. Hist. Soc. of Lanc. and Chesh., Vol. 40, p. 143. [Not seen; title and abstract taken from Morton, Proc. Liverp. Geol. Soc., 1890-91, Vol. 6, Part 3, p. 313].

WILLIAM CRAWFORD WILLIAMSON. YORK S.W.

On Some Anomalous Cells developed within the interior of the Vascular and Cellular Tissues of the Fossil Plants of the Coal-Measures [from the Halifax beds; describing and figuring structure of *Rachiopteris corrugata* Will., *Lyginodendron oldhamianum*, *R. insignis*, and *Lepidodendron*]. Ann. of Bot., Feb. 1888, pp. 315-323, and plate 18.

1889.

J. R. BOYLE. YORK S.E.

The Lost Towns of the Humber; with an introductory chapter on the Roman Geography of South East Yorkshire. . . . . .

by | J. R. Boyle | . . . . | Hull: | A. Brown and Sons | . . . . 1889. 8vo., pp. xii. + 102. [Contains much information on the condition and extent of the land in South-East Yorkshire in early times].

RICHARD HOWSE. NORTHUMBERLAND S., CHEVIOTLAND, DURHAM.

Contributions towards a Catalogue of the Flora of the Carboniferous System of Northumberland and Durham. Part I. -Fossil Plants from the Hutton Collection. Catalogue of those specimens of the Hutton Collection of Fossil Plants that have been presented to the Natural History Society by the Council of the Mining Institute, and are now exhibited in the Geological Room of the Museum, at Barras Bridge, Newcastle-upon-Tyne [a detailed description of nearly 300 specimens of Coal-measure fossils presented to the Museum; illustrated by seventeen woodcuts and with prefatory stratigraphical notes]. N.H. Trans. Northumb., Durham, and Newcastle-upon-Tyne, Vol. 10, Part 1, dated 1888, published 1889, pp. 19-151.

RICHARD HOWSE. DURHAM, NORTHUMBERLAND S., CHEVIOTLAND.

A Catalogue | of | Fossil Plants | from the | Hutton Collection, presented by the Council of the Mining Institute to the Natural History Society, 1883. | By Richard Howse. | With seventeen woodcuts. [From Natural History Transactions of Northumberland, Durham, | and Newcastle-upon-Tyne, Vol. X.] | Newcastle-upon-Tyne: | Printed by J. Bell and Co., Railway Lane, Pilgrim Street. | 1888. [published 1889?; 8vo., pages 1-135 and six plates; reprint of preceding paper with pagination altered; a detailed description of nearly 300 specimens of Coal-measure fossils, illustrated by seventeen woodcuts, and prefaced by stratigraphical notes].

RICHARD HOWSE. YORKSHIRE, DURHAM, NORTHUMBERLAND, ETC.

Natural History Society of | Northumberland, Durham, and Newcastle-upon-Tyne. | — Guide to the Collections of local fossils | in the Museum of the | Natural History Society, Barras Bridge, | Newcastle-upon-Tyne. | — | Printed for the Natural History Society. | — | 1889. [8vo., 62 pp.].

R. KIDSTON. YORK S.W., CHEVIOTLAND.

Additional Notes on Some British Carboniferous Lycopods [*Lepidodendron veltheimianum* Sternb., from the Lower Carboniferous of Lumby Law Railway-cutting near Edlingham Church, Northumberland; *Bothrodendron minutifolium* (Boulay), from shale over 'Barnsley Thick Coal' at Monkton Main Colliery, near Barnsley (W. Hemingway); *B. wilkianum* Kidst., n. sp., Little Whickhope Burn, near first branch above Cross Sike, Northumberland (H. Miller)]. Proc. R. Phys. Soc. Edinb., Vol. 10, Part 1, 1888-89, pub. 1889, pp. 88-97 and plate 4.

W. H. PAINTER. DERBYSHIRE.

A Contribution to the Flora of Derbyshire. | Being an Account of the | Flowering Plants, Ferns, and Characeæ | found in the County. | By | [3 lines of author] | London: | . . | . . | Derby: | . . | 1889. [8vo., vi. + 156 pages and folding map, with very brief account of Geology at pp. 1-2].

T. M. READE. LANC. S., CHESHIRE.

Slickensides and Normal Faults [describes Slickensides in faults in the Trias around Liverpool, Carboniferous and Silurian rocks, and the results of experiments proving them to have been produced by the fracture and grinding of opposite sides of rock against each other; the cause of faults due to vertical movements, either up-throws or down-throws by a continuously acting force, caused by variations of temperature in the earth's crust]. Proc. Liverp. Geol. Soc., Vol. 6, Part 1, 1889, p. 92.

W. THOMSON AND E. SCHUNCK. LANC. S. OR CHESHIRE.

Green Colouring-Matter in Buried Leaves [found 21 feet below the surface when digging for the Manchester Ship Canal, and must have

lain there for centuries]. Mem. and Proc. Manch. Lit. and Phil. Soc., ii. (1889), pp. 216-9 and pp. 231-3, with a figure; abst. in Journ. of R. Micr. Soc., Feb. 1890, p. 53 [not seen].

1890.

ANON. [not signed]. ISLE OF MAN, CHESHIRE.

Easter Excursions [to Isle of Man, and to Beeston Castle and Peckforton Hills]. Journ. Liverp. Geol. Ass., Vol. 9, Session 1888-89, publ. 1890, pp. 38-39.

ANON. [not signed]. YORK MID W., CHESHIRE.

Field Meetings [at Birkenhead Priory, Ingleton, Leasowe, and Storeton; detailed notes]. Journ. Liverp. Geol. Ass., Vol. 9, Session 1888-89, publ. 1890, pp. 61-64. [At Burton Point, and at Otterspool]. Id., pp. 79-80.

H. C. BEASLEY. NOTTS., CHESHIRE.

The Life of the English Trias [with notes of footprints at Storeton and Lymm, and fish-remains near Nottingham]. Proc. Liverp. Geol. Soc., 1889-90, Vol. 6, Part 2, 1890, pp. 145-165.

[W.] BOYD-DAWKINS. ISLE OF MAN.

[Abstract of his paper on the Conglomerates of the South of the Isle of Man, in Vannin Lioar]. Journ. Liverp. Geol. Ass., Vol. 9, Session 1888-89, publ. 1890, p. 48.

ISAAC E. GEORGE. ISLE OF MAN.

Notes on some Manx Lavas [which are discussed in detail]. Journ. Liverp. Geol. Ass., Vol. 9, Session 1888-89, publ. 1890, pp. 41-47.

J. G. GOODCHILD. CUMBERLAND, WESTMORLAND.

Excursion [of the Geologists' Association] to Edenside. August 8th to 10th, 1889 [describes the Sections in the Carboniferous Limestone, Penrith Sandstone, Brockram, etc., at Appleby, Roman Fell, and Cotehill], Proc. Geol. Ass., 1890, pp. xciv.-xcix.; reprint, pp. 1-6.

BENJ. HOLGATE. YORK MID W. AND S.W.

Some Physical Properties of Coal [Describes in detail the differences between various seams of coal and gives reasons for such differences]. Proc. Yorks. Geol. Soc., 1890, pp. 460-468.

PERCY F. KENDALL [not signed]. LANC. S., CHESHIRE.

Rambles taken during the year 1889. . . . Ship Canal [with opinions as to the geology of the district, a former salt lake]. 10th Ann. Rep. Manch. Micr. Soc., for 1889, publ. 1890, pp. 112-114.

T. MELLARD READE. LANCASHIRE, CHESHIRE, ETC.

List | of | Scientific Papers and Works | By | T. Mellard Reade, [6 lines of titles] | — | London: | Printed by Taylor and Francis, . . 1890. [8vo., 12 pages; contains titles, etc., of 112 papers and articles written between 1870 and 1890.]

C. D. SHERBORN. YORK S.E., LINC. N.

Report on a Collection of Microscopical Sections of Red Chalk and Gault belonging to Mr. W. Hill, F.G.S. [noting the foraminifera contained in 24 different sections from various localities, including Rutters Pit, Candlesby, Lincolnshire; South Cave, Wharram Grange, Great Givendale, Speeton, etc.] Journ. of R. Micr. Soc., Oct. 1890, pp. 564-6.

LAKE DISTRICT, LINC. N. AND S.,
WILLIAM SPIERS. YORK N.E. AND S.W., DERBYSHIRE.

Rambles and Reveries of a Naturalist. By the Rev. William Spiers, M.A., | . . | . . London: | Charles H. Kelly, ... 1890 [Crown 8vo., cloth, 256 pages; notes on pp. 74-75 on Encrinites at Hebden Bridge and Derbyshire; a chapter, pp. 100-109 on 'St. Hilda's Snakestones' at Whitby and Lincoln (Swan's brickyard); p. 152, *Lonsdalia* in

September 1898.

Derbyshire, *Cyathaxinia* in the Lake District; p. 153, Marton, near Gainsborough, a locality for liassic fossils; and p. 198, *Phillipsia* and *Griffithsides* at Castleton, Derbyshire].

FRED S. TELLET. ISLE OF MAN.

Inaugural Address [to Manx Geological Society, chiefly a summary of knowledge relating to the Pleistocene deposits of the island]. Trans. Manx. Geol. Soc., 2nd Session, 1890, pp. 3-16.

W. C. WILLIAMSON. YORKSHIRE, ETC.

"Our present knowledge of the Vegetation of the Carboniferous Age, and the further advancement of the study of the subject." Trans. Manch. Geol. Soc., Vol. 21, Part 4-5, 1890, pp. 156-166.

1891.

R. H. ASHLEY [not signed]. DERBYSHIRE.

Field Meeting, held at Matlock Bath on Whit Monday [1891; conducted by D. Clague; very brief account]. Journ. Liverp. Geol. Ass., Vol. 11, Session 1890-91, p. 44.

WM. FEATHERSTONHAUGH. DURHAM.

Edmondbyers [referring especially to certain terraces on the hills supposed to be old beaches and cliffs, due to a lake formed by the damming of the valley by ice; similar features noted at Howens Gill]. Notes on Hist. Geol. and Ornith. of Derwent Valley, Vol. 1, pp. 86-89, 1891.

ARTHUR H. FOORD. NORTHERN COUNTIES.

Catalogue of the Fossil Cephalopoda in the British Museum (Natural History), Cromwell Road, S.W. — Part II. Containing the remainder of the suborder Nautiloidea, consisting of the families Lituitidæ, Trochoceratidæ. and Nautilidæ, with a supplement. — By Arthur H. Foord, F.G.S. London: [seven lines imprint] 1891. [8vo. cloth, pp. xxviii. – 407, with woodcuts and a folding table].

BERNARD HOBSON. ISLE OF MAN.

Privately printed List of Olivine-Dolerite (or Basalt) Dykes in the Isle of Man [47 in number, with locality, strike, width, and other particulars]. 3 pp. [Manchester], 1891.

JAMES HORNELL. CHESHIRE, LANC. S.

The Influence of Geological Formation upon Shore Fauna [exemplified by observations made at Hilbre Island, etc., near Liverpool]. Journ. Liverp. Geol. Ass., Vol. 11, Session 1890-91, pp. 22-26.

P. F. KENDALL.

Hints for the Guidance of Observers of Glacial Geology. Stockport, 1891, pp. 55 (alternate pages blank for notes).

ROBERT KIDSTON. NORTHUMBERLAND S., DURHAM, LANC. S., YORK S.W.

Notes on the Palæozoic Species mentioned in Lindley and Hutton's "Fossil Flora" [giving identifications of the various forms figured, mostly from the Northumberland and Durham Coal-field, but a few also from the Coal-fields of Yorkshire and Lancashire]. Proc. Roy. Phys. Soc. Edinb., Vol. 10, Part 2, 1889-90, pub. 1891, pp. 345-391.

W. H. MILES [not signed]. CHESHIRE.

Field Meeting [of Liverpool Geological Association], Easter Monday [at Flaybrick Hill, conducted by C. Ricketts]. Journ. Liverp. Geol. Ass., Vol. 11, Session 1890-91, p. 30.

G. H. MORTON. LANC. S., CHESHIRE.

List of Works and Papers on the Geology of the Country around Liverpool, from June 1881, to September 1890, with some additions to the former Lists [giving 93 titles, with gist]. Proc. Liverp. Geol. Soc., 1890-91, Vol. 6, Part 3, pp. 297-316.

A. R. PRITCHARD. ? LANC. S.

Exhibits [a specimen of Wilhelmite (Anhydrous Silicate of Zinc) from the Boulder Clay of 'the neighbourhood']. Journ. Liverp. Geol. Ass., Vol. 11, Session 1890-91, p. 31.

JAS. F. ROBINSON. DURHAM.

The Geological Aspects of the Derwent Valley [the Durham river of that name, which traverses the Carboniferous Limestone in its upper part, and the Coal Measures lower down; the drift is also referred to]. Notes on Hist. Geol. and Ornith. of Derwent Valley, Vol. 1, 1891, pp. 62-66.

FRANK RUTLEY. LANC. S.

Notes on Crystallites [discussing also devitrification of glass at St. Helen's Works (pp. 267 and 270)]. Mineralog. Mag., Dec. 1891, Vol. 9, pp. 261-271.

JAS. SPENCER. YORK S.W.

The Affinity of Dadoxylon to Cordaites [Points out that the Coal-measure fossil 'Dadoxylon' is usually thought to have affinity with Araucaria, but brings forward evidence to show that it has greater resemblances to the Cycads]. Proc. Yorks. Geol. Soc., 1891, pp. 95-104.

[MARK] STIRRUP. DURHAM.

Fossiliferous Slabs of Marl Slate [Description of some slabs of Upper Permian slates, containing fossil fishes, sent to a meeting of the Manchester Geological Society from Durham by Mr. Bell]. Trans. Manch. Geol. Soc., 1890-1891, Vol. 21, Part 11, 1891, pp. 296-297.

CECIL F. WEBB. DERBYSHIRE.

Notes made on a Visit to Castleton [Derbyshire; the notes refer to caves, blue-john, Speedwell Mine, limestone fissures, fossils, etc.]. Journ. Liverp. Geol. Ass., Vol. 11, Session 1890-91, pp. 39-44.

1892.

ANON. [not signed]. LINC. S.

Extraordinary Artesian Spring [at Sleaford, struck at a depth of 156 feet in the limestone beds of the lower oolites]. Land and Water, 16th April 1892, p. 425.

ANON. [not signed]. LINC. N.

Frodingham Iron Ore [analyses of three specimens from a bed 13 ft. thick; the richest has 46·4 per cent. of ferric oxide]. Journ. Iron and Steel Inst., No. II., 1892, pp. 306-307.

SAMUEL BARBER. CUMBERLAND, WESTMORLAND.

Beneath Helvellyn's Shade. | Notes and Sketches | in the Valley of Wythburn | . . . . . | [four lines of poetry] | London: | Elliott Stock . . | 1892 [small 8vo., pp. x. + 166; discussing denudation and boulders slightly at pp. 43-49].

J. F. BLAKE. NOTTS.

Excursion [of the Geologists' Association] to Nottingham [Report of visits paid to Sections in the Mountain Limestone, Magnesian Limestone, Permian, Triassic, and Drift deposits around Nottingham; sections given showing the rocks exposed across the Leen Valley, and from Rough Hill to Hemloch Stone]. Proc. Geol. Ass., Vol. 12, Parts 9 and 10, Aug. and Nov. 1892, pp. 386-392.

JAMES W. DAVIS. YORK N.E.

On some Sections in the Liassic and Oolitic Rocks of Yorkshire [with sketch maps, fossil lists, etc.; the paper treats of the Lias and part of the Lower Oolites as seen at Robin Hood's Bay and the Peak; the Gristhorpe and Filey sections from the Millepore beds up to the Coral Oolite; and the sections near Scarborough and Hackness of the Middle Oolites from the Kellaways Rock to the Upper Calcareous Grit]. Proc. Yorks. Geol. Soc., Vol. 12, Part 2, 1892, pp. 170-214.

C. E. DERANCE. LANC. S.

"Further Notes on Triassic Borings" [gives particulars of important borings in the Liverpool district, and their bearing upon the underground water supply]. Trans. Manch. Geol. Soc., 1891-92, Vol. 21, Part 16, 1892, pp. 478-488.

J. G. GOODCHILD. CUMBERLAND, WESTMORLAND.

Notes on the Water Supply of Edenside. Trans. Cumb. and Westm. Ass., No. 17, 1891-2, pp. 43-51.

W. S. GRESLEY. DERBYSHIRE.

A Typical Section, taken in detail, of the "Main Coal" of the Moira, or Western Division of the Leicestershire and South Derbyshire Coal-field [followed by] a Detailed Columnar Section of the "Main Coal" seam of the Leicestershire and South Derbyshire Coal-field [and] explanation of local terms, &c., used in this Columnar Section. [A detailed description of the various beds exposed in the Coal-field, together with their lithological and palæontological characteristics; illustrated by numerous plans and sections]. Trans. Manch. Geol. Soc., Vol. 21, Part 17, 1892, pp. 520-535, with woodcuts and 2 plates: discussion reported in Trans. Manch. Geol. Soc., Vol. 21, Part 18, 1892, pp. 551-563.

THOMAS HICK. YORK S.W.

On a new Fossil Plant from the Lower Coal-measures [described, discussed, and figured, and provisionally named *Tylophora radiculosa*, its affinities being considered to be with *Stigmaria*]. Journ. Linn. Soc., Bot., No. 198, 30th March 1892, Vol. 29, pp. 86-102 and plates 16-17.

ROBERT HOLLAND. CHESHIRE.

Concerning Marl Pits [in the Cheshire Wirral; their use in agriculture]. Nature Notes, August 1892, pp. 147-152.

RICHARD HOWSE. DURHAM.

Note on the Conglobated form of the Magnesian-limestone of the County of Durham [describing the structure and emphasizing the evidence for its superinduced nature; the beds with this structure are not magnesian]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 11, Part 1, 1892, pp. 60-65.

OSMUND W. JEFFS. NORTH OF ENGLAND, CHESHIRE, YORK N.E.

The Commercial Aspects of Geology. Abstract of a lecture by Osmund W. Jeffs. — Reprinted from "The Counting House" — London: . . . . — 1892. [Crown 8vo., pp. 1-14; refers briefly to Coal-fields of the North of England; the Salt mines of Cheshire, Jet and Alum of Whitby, etc.].

OSMUND W. JEFFS. CHESHIRE.

The Geology of Wirral, and other papers. [on Cheshire geology; illustrated by 2 plates and numerous woodcuts; the 'other papers' deal with Bidston Hill, Trias at Tranmere, denudation of red marl, coal in Wirral, 'Thor's Stone' on Thurstaston Hill, geological excursions in Wirral, and the strata at Hilbre Island] By Osmund W. Jeffs. — Liverpool: . . 1892 [Small 4to., viii. + 44 pages].

JOHN LEYLAND. YORK N.E. AND S.E.

The Yorkshire Coast and the Cleveland Hills and Dales, with illustrations by Alfred Dawson and Lancelot Speed [Contains numerous references to the Geology of East Yorkshire throughout the book, and a table (Appendix A) of Geological formations of the Yorkshire Coast from the Lower Lias upwards, with a list of localities of occurrence]. Pp. vii. + 334, 1892.

R. MILLER. YORK MID W.

The Barnsley Coalfield. Trans. Fed. Inst. Mining Engin., Vol. 2, 1892, pp. 7-10.

H. M. PLATNAUER. YORK N.E.

Notes on Two Borings [one 1,180 ft. deep at Strensall and another 233 ft. deep in Haxby Road, York]. Ann. Rep. Yorks. Phil. Soc. for 1891, pp. 77-79 (1892).

JAS. F. ROBINSON. DURHAM.

'The Glacial Drift in the Vale of Derwent' [giving a general description and pointing out localities for observing the chief features]. Notes on the Hist. Geol. and Ornith. of Derwent Valley, Vol. 2, pp. 24-33, 1892.

CHARLES ROEDER. LANC. S.

Notes on Marine Shells derived from the Post-Pliocene Deposits of Manchester and District [describes the different glacial beds in the Manchester District, and gives lists of marine shells collected from the Lower Boulder Clay, Middle Gravels, and Upper Boulder Clay; concludes:—'As to the shells which we find in these clays, and which must also be considered as mere "*Boulders*," their occurrence need not by necessity be of direct marine derivation, but, as pointed out already by Tiddeman, they may have been derived by the ice sheet working over a previous sea bed which pushed them on to the land']. Trans. Manch. Geol. Soc., 1891-92, Vol. 21, Part 20, 1892, pp. 607-622.

J. SHIPMAN. NOTTS.

Lecture on "Local Geology," delivered at Mansfield. Trans. Nat. Ass. of Colliery Managers for 1892 [not seen; t. J. W. Carr, 1893].

C. FOX-STRANGWAYS. YORK N.E., S.E.

The Jurassic Rocks of Britain: Vol. i., Yorkshire; Vol. ii., Yorkshire, Tables of Fossils [a full monograph on the Lias and Oolites from the coast to the Humber, with map and sections and full fossil lists; also chapters on Physical History, Scenery and Denudation, and Economic Geology, and a hitherto unpublished memoir by William Smith on the Stratification of the Hackness Hills]. Mem. Geol. Surv. United Kingdom, 8vo., pp. ix. + 550, 6 plates, and (Vol. 2) 250 pp.

W. WATTS. LANC. S., YORK S.W.

Thermometrical Observations of Atmospheric Air and Water, at Piethorn and Denshaw [describes the effects of moisture, etc., on the rocks and soils of the neighbourhood]. Trans. Manch. Geol. Soc., Vol. 21, Part 17, 1892, pp. 503-519.

T. TINDALL WILDRIDGE. YORK S.E.

Lake Dwellings of Yorkshire [a chapter (pp. 1-36) in Andrews' "Bygone Yorkshire"; deals fully with the Ulrome Lake-Dwelling; illustrated by a view of 'Pile-Dwellings, Venezuela, 1890,' and of a 'Restoration of the West Furze Lake-Dwelling, Ulrome']. Hull, 1892, 267 pp.

W. C. WILLIAMSON [not signed]. YORKSHIRE, LANCASHIRE.

Professor W. C. Williamson, LL.D., F.R.S., on his Earlier Palæontological Work [Report of lecture delivered before the Manchester Geological Society—a useful account of the state of palæontological knowledge in 1835-6, compared with that of '92]. Trans. Manch. Geol. Soc., 1891-92, Vol. 21, Part 16, 1892, pp. 488-502.

1893.

ANON. [not signed]. YORK MID W. AND S.E.

York, Bootham, N.H.C. [note of Boulder 4½ × 3½ · 3 feet, weighing 2 tons, at Holgate; and blowing-holes at Flamborough]. Nat. Hist. Journ., 15th May 1893, p. 62.

ANON. [not signed]. NORTHUMBERLAND S.

The Northumberland Coalfield. Colliery Guardian, Vol. 66, pp. 822, 869, 917, 974, 1010, 1058.

ANON. [not signed]. DURHAM.

The Durham Coalfield. Colliery Guardian, Vol. 66, p. 1106, 1153.

ANON. [not signed]. LINC. N.

A Remarkable Spring in Lincolnshire [at Willoughby; at 245 feet the bore struck a bed of ironstone, and on penetrating this a magnificent spring was met with]. Morning Post, 25th Jan. 1893; Geol. Mag., Feb. 1893, p. 96.

ANON. [not signed]. YORK N.W.

By the Banks of the Yorkshire Rivers. The Ribble. IX. From Langcliffe to Ribblehead [pointing out the effect of the geological structure, and especially of the Craven Fault, upon the physical features]. Yorks. Weekly Post, 9th Sept. 1893.

ANON. [not signed]. YORK MID W.

Glacial Deposits on Rombalds Moor [account of an excursion of the Leeds Geol. Ass.]. Yorks. Weekly Post, 9th Sept. 1893.

ANON. [not signed]. YORK S.W. AND MID W.

Reports of Field Excursions [of Leeds Geol. Association; Dunford Bridge, 9th July 1892; Draughton, 13th Aug. 1892; detailed narratives]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 84-85 and 89-90.

W. TALBOT AVELINE. CUMBERLAND AND WESTMORLAND.

The St. Bees Sandstone [combating Mr. Goodchild's classification of this formation with the Bunter and referring it to a horizon in the Magnesian Limestone group]. Geol. Mag., Feb. 1893, p. 87.

S. BARING-GOULD. CHESHIRE.

The Cheshire Salt Region [describing the mode of occurrence of the salt with some details of its distribution and thickness and accounts of subsidences produced by the pumping of brine]. Good Words, Jan. 1893, pp. 59-63.

F. BARKE. DERBYSHIRE.

Section E.—Geology. Chairman.—Mr Barke. Report 1892-93 [describes excursion to Tissington and Dovedale]. Ann. Rep. and Trans. N. Staffs. N.F.C., for 1892-93, publ. 1893, p. 65.

THOMAS BELL. See 'Frank Coulson.' DURHAM.

WM. R. BELL. YORK N.W.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting numerous erratics in Laithkirk parish, near Middleton-in-Teesdale]. Nat., Dec. 1893, pp. 364-5.

H. H. ARNOLD-BEMROSE. DERBYSHIRE.

The Toadstones of Derbyshire [olivine-dolerite lavas interbedded in the Carboniferous Limestones; brief account of relations and lithology]. Nott. Daily Guard., 21st Sept. 1893; Geol. Mag., Dec. 1893, p. 559; Rep. Brit. Ass. for 1893, publ. 1894, pp. 780-781.

HERBERT BOLTON. NORTHERN COUNTIES, ETC.

Museum Handbook: Catalogue of Type Fossils [described and figured specimens in the Manchester Museum, Owens College]. pp. 35 + iii., Manchester.

HERBERT BOLTON. ISLE OF MAN.

On the Occurrence of a Trilobite in the Skiddaw Slates of the Isle of Man [the first record; an imperfect fragment, possibly of an *Asaphus*]. Geol. Mag., Jan. 1893, pp. 29-31.

H. BOLTON. ISLE OF MAN.

On the Skiddaw Slates of the Isle of Man [noting especially the intercalation of volcanic ashes, and the discovery of fossils at certain

horizons, viz., *Dictyonema sociale* and a cast of a trilobite]. Nott. Daily Guard. and Nott. Daily Express, 19th Sept. 1893; Rep. Brit. Ass. for 1893, publ. 1894, pp. 770, 771.

[WILLIAM] BOYD. YORK MID W.

Littondale: Past and Present. Part I. Fifty Years in Arncliffe. By the Venerable Archdeacon Boyd, Vicar. . . . . Leeds: . . . 1893 [square 8vo.; at p. 16 is given a very slight sketch of the geological features].

C. B[ROWNRIDGE]. YORK MID W.

Excursion to Brimham Rocks [20th Aug. 1892; a detailed account]. Trans. Leeds Geol. Ass., Part 8, 1892-93, pp. 91-92.

F. M. BURTON. LINC. N.

Formation of a Lincolnshire Naturalists' Union [and excursion to Mablethorpe, 12th June 1893]. Nat., Aug. 1893, pp. 254-256.

F. M. BURTON. LINC. N.

[Geological Observations made by] Lincolnshire Naturalists at Woodhall Spa [on 7th August 1893; geology described, and boulder mentioned]. Nat., Oct. 1893, pp. 309-311.

JOHN BURTON. YORK S.W.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting various erratics at Horbury]. Nat., Dec. 1893, pp. 367-368.

GEORGE CALDWELL. LANC. S.

Fossil Plants from the Cannel of the Wigan Four Feet Mine [a letter accompanying specimens exhibited; report of discussion is appended]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 7, 1893, pp. 211-215.

J. W. CARR. See 'J. Shipman.' NOTTS.

J. W. CARR, J. SHIPMAN, R. M. DEELEY, AND J. M. MELLO. NOTTS.

The Geology of Nottinghamshire [described; general sketch, Rhætic beds, Lias, by J. W. Carr; Carboniferous, Permian, New Red Sandstone, by J. Shipman; Pleistocene, Drift Deposits, by R. M. Deeley; and Cavern Deposits, the Cresswell Caves, by J. M. Mello]. Carr's Contribs. to Geol. and Nat. Hist. of Nottinghamshire, 1893, pp. 4-33.

[W. L. CARTER, Secretary.] YORK MID W.

Excursion to Dunford Bridge [to examine the Rough Rock, the Middle Grits, and the Halifax Hard Bed Coal]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 84-85.

W. L. C[ARTER]. YORK MID W.

Excursion to the Meanwood Valley [27th July 1892; giving section seen in the quarries, and particulars of *Stigmaria* roots found in the Ganister beds, with a note on the foldings seen in these beds]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 85-87.

[W. L. CARTER, Secretary.] YORK N.W.

Excursion to Draughton [to visit the contorted limestone strata of the Draughton and Hambleton quarries]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 89-90.

W. LOWER CARTER and JOHN W. STATHER. YORK N.E.

Yorkshire Naturalists at Kirkby Moorside [Geology]. Nat., Oct.-Nov. 1893, pp. 320-323.

FREDERICK CHAPMAN. YORK S.E.

The Foraminifera of the Gault of Folkestone.—IV. [gives records also of *Lagena globosa* (Mont.), *L. apiculata* Reuss and var. *emaciata* Reuss, *Nodosaria* (*Glandulina*) *humilis* Roem., *N.* (*Gl.*) *cylindracea* Reuss, *N. oligostegia* Reuss, *N.* (*Dentalina*) *mucronata* Neugeb., *N.* (*D.*) *obscura* Reuss, *N. lamellosocostata* Reuss, and *N. prismatica* Reuss, from the

Red Chalk of Speeton (Burrows, Sherborn and Bailey); and of *Lagena sulcata* W.& J., from the lias of Yorkshire (Blake)]. J. of R. Micr. Soc., Oct. 1893, pp. 579-595 and plates 8-9.

W. C[HEETHAM]. YORK MID W.

Excursion to Reevah [on Rombalds Moor, 27th Aug. 1892, with remarks on the boulders observed on the moor, belonging to local rocks]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 92-93.

J. EDMUND CLARK. YORK N.E.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting a Millstone Grit boulder at Clifton, near York]. Nat., Dec. 1893, p. 366.

F. CLOWES. NOTTINGHAMSHIRE.

On a Nottingham Sandstone containing Barium Sulphate as a Cementing Material [forming Bramcote and Stapleford Hills and the Hemlock Stone]. Nott. Daily Guard., 15th Sept. 1893; Rep. Brit. Ass. for 1893, publ. 1894, p. 732.

E. MAULE COLE. YORK S.E.

Erosion of the Yorkshire Coast. Being the Report of the Coast Erosion Committee of the Yorkshire Naturalists' Union for 1892. Nat., May 1893, pp. 142-144.

GRENVILLE A. J. COLE. DURHAM, LANC. S.

On Some Examples of Cone-in-Cone Structure [in Coal at Wigan and Magnesian Limestone of Durham]. Mineralog. Mag., March 1893, Vol. 10, pp. 136-141, and woodcuts.

FRANK COULSON. DURHAM.

Section of Strata sunk through in No. 2 Shaft, Deaf Hill Colliery, Co. Durham, for the Trimdon Coal Co. during the years 1891-92, by Mr. Frank Coulson, per Mr. Thomas Bell, H.M.I.M., with notes on the Fossil Fish of the Marl Slate therefrom by Dr. R. H. Traquair, F.R.S. [gives details of strata passed through in a boring 161 fathoms 1 ft. 3 in. in depth at Deaf Hill Colliery]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 6, 1893, pp. 191-194.

H. W. CROSSKEY [Secretary]. NORTH OF ENGLAND.

Twentieth Report of the Committee . . . . appointed for the purpose of recording . . . Erratic Blocks . . . [recording, with particulars, Erratics in Yorkshire, Lancashire, Cheshire, Derbyshire, and the Isle of Man]. Rep. Brit. Ass. for 1893, publ. 1894, pp. 267-289.

S. W. C[UTTRISS]. YORK MID W.

Excursion to Otley Chiven [20th May 1893, in the Millstone Grit series]. Trans, Leeds Geol. Ass., Part 8, 1892-3, pp. 95-96.

ELIZABETH DALE. DERBYSHIRE.

On the Glaciation of the Country round Buxton [noting boulders from the Lake District and others of local origin, including 'toadstone' derived from the N.E.]. Glac. Mag., Dec. 1893, pp. 111-113.

R. M. DEELEY. NORTHERN COUNTIES.

The Glacial Succession [giving the sequence of the English glacial deposits according to the author, and comparing with the succession given for Europe by Prof. J. Geikie; it is considered to indicate a series of glacial and interglacial phases]. Geol. Mag., Jan. 1893, pp. 31-35.

R. M. DEELEY. See 'J. W. Carr.' NOTTS.

C. E. DERANCE. NORTH OF ENGLAND.

On the Relation of Geology to the Population and Agriculture of England and Wales. [With five appendices]. Trans. Manch. Geol. Soc., Vol. 22, 1892-93, Part 3, 1893, pp. 85-114, and Vol. 22, Part 6, 1893, pp. 181-191.

[C. E.] DERANCE. CHESHIRE.

The Glacial Drift Deposits at Sandbach [good sections exposed on the railway between Crewe and Stockport]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 8, 1893, pp. 235-237; also p. 268.

C. E. DERANCE. CHESHIRE.

Results of the Salt Union Boring at Marston, near Northwich [with detailed section to 2,610 feet, and notes on borings in the New Red at other places]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 9, 1893, pp. 269-302 (including discussion).

[C. E.] DERANCE and [MARK] STIRRUP. LANC. S.

[Notices of Earthquake Shocks felt in 1870 and 1889 in South Lancashire; in discussion on a paper by Prof. Hull]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 6, 1893, pp. 201-203.

JOSEPH DICKINSON. LANC. S.

On Outbursts of Soft Coal and Gas in the Royley Seam, at the Nook Pit, Broad Oak Colliery, Ashton-under-Lyne. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 8, 1893, pp. 239-265 and plan; and discussion, Part 11, 1893, pp. 332-357.

E. DICKSON. LANC. S.

Note on Section at Skillaw Clough, near Parbold [recording *Schizodus* from the Permian marls there; the limestone is magnesian, giving 24·15 per cent. carbonate of magnesia and 9·15 carbonate of iron]. Proc. Liverp. Geol. Soc., Vol. 7, Part 1, 1893, pp. 106-108.

ARTHUR R. DWERRYHOUSE. CHESHIRE.

An Intrusive Mass of Boulder Clay at Bidston, Cheshire [describing masses of boulder clay forced in among the Keuper strata so as to appear interstratified with them]. Glac. Mag., Aug. 1893, pp. 9-12 and two plates.

ARTHUR R. DWERRYHOUSE. CHESHIRE.

Intrusive Boulder Clay [replying to Mr. Morton's criticisms]. Glac. Mag., Nov. 1893, pp. 107-109.

A. R. DWERRYHOUSE. See 'J. Lomas.' LANCASHIRE.

CHARLES W. FENNELL. YORK S.W.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting various erratics at and near Wakefield]. Nat., Dec. 1893, p. 368.

[GEO. FLETCHER.] DERBYSHIRE.

The Midland Counties Branch. Geological Excursion [to Darley Dale, etc.: a general account, with sections to illustrate the geological structure of Derbyshire, the Crick landslip, etc.]. Trans. Nation. Ass. Colliery Managers, Vol. 4, 1893, pp. 319-329.

GEORGE FOWLER. NOTTS.

Note on a Fault at Cinder Hill [throwing only 76 feet in the Permians but 340 feet in the underlying Coal Measures; also indicating very considerable horizontal displacement]. Nott. Daily Guard., 15th Sept. 1893; Rep. Brit. Ass. for 1893, publ. 1894, pp. 749-750.

J. G. GARSON. YORK S.E.

On the Crania and other Human Remains found in the Barrow at Howe Hill, Duggleby [giving detailed descriptions of human remains from the Tumulus at Howe Hill]. Proc. Yorks. Geol. Soc., 1893, pp. 227-240.

EDMUND J. GARWOOD [not signed]. NORTHUMB. S., CHEVIOTLAND.

[Geology in] A History of Northumberland, issued under the direction of the Northumberland County History Committee, Vol. I. [dealing with Bamburghshire; geological sketch, pp. 3-9; geology of Bamburgh parish, pp. 13-17; of Belford Chapelry, pp. 357-362; Appendix I., containing a bibliography of 36 articles]. 4to. pp. ix. + 462; Newcastle-on-Tyne, 1893.

ARCHIBALD GEIKIE. NORTHERN COUNTIES.

Text-Book of Geology; 3rd edition, revised and enlarged [incorporating the chief additions to knowledge of north-country geology since the date of the 2nd edition]. 8vo., pp. xvi. + 1147 and 471 figures in text; London, 1893.

J. G. GOODCHILD. CUMBERLAND, WESTMORLAND.

The St. Bees Sandstone and its Associated Rocks [referring these rocks to the Trias, and showing that they rest with a slight unconformity upon the Magnesian Limestone group (which includes the Hilton plant-beds), while a much greater unconformity occurs at the base of the underlying Penrith Sandstone and Brockram]. Rep. Brit. Ass. for 1893, publ. 1894, pp. 722-723.

J. G. GOODCHILD. CUMBERLAND AND WESTMORLAND.

Notes on the Water Supply of Edenside [a few remarks on the general principles governing water-supply followed by their application to the district; the Penrith Sandstone to the west of the Eden and the St. Bees' Sandstone to the east are excellent sources]. Trans. Cumb. and Westm. Ass., Part 17, 1893, pp. 43-51.

J. G. GOODCHILD. YORK N.W.

[Geological Observations made by] the Yorkshire Naturalists' Union at Aysgarth [22nd May 1893]. Nat., Aug. 1893, pp. 230-232.

J. G. G[OODCHILD]. YORK N.W.

Excursion to Aysgarth [22nd May 1893; giving a general account of the Yoredale series in this its typical area]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 96-99.

W. GREGSON. YORK N.W., N.E. AND MID W.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting various boulders at Tanfield, Lindrick near Ripon, Rokeby, Startforth, Pickhill, and Sinderby]. Nat., Dec. 1893, pp. 365-6.

W. S. GRESLEY [and others]. WESTMORLAND, DERBYSHIRE, LANC. S., YORK MID W.

A Typical Section of the "Main" Coal of the Moira Division of the Leicestershire Coalfield [Reply to discussion—see Part 18, Vol. 21; in the discussion on this reply Messrs. Geo. Wild, Mark Stirrup, C. E. DeRance, etc., refer to observations made at Preston Docks, Wild Boar Fell, Altcar, Hulton Colliery, Meanwood near Leeds, etc.]. Trans. Manch. Geol. Soc., Vol. 22, 1892-93, Part 3, 1893, pp. 74-85.

C. D. HARDCASTLE. YORK S.E.

"Chalk and Flint" [Report of a lecture delivered to the Leeds Geol. Soc. on 17th Nov. 1892; the Zones of Yorkshire Chalk, etc., referred to and compared with the Chalk of other districts]. Trans. Leeds Geol. Ass., Part 8, 1892-3, publ. 1893, pp. 14-24.

ALFRED HARKER. YORK S.E.

Norwegian Boulders in Holderness. Nat., Jan. 1893, pp. 1-4.

ALFRED HARKER. YORK S.E.

Scandinavian Rocks in the English Boulder-Clays [with a list from Holderness]. Geol. Mag., March 1893, p. 140.

ALFRED HARKER. CUMBERLAND, WESTMORLAND.

On the Migration of Material during the Metamorphism of Rock-Masses [founded chiefly on observations around the Shap Granite and other Lake District intrusions]. Journ. of Geol., Sept.-Oct. 1893, Vol. 1, pp. 574-578.

A. H[ARKER]. YORKSHIRE.

[Review of] A Catalogue of the British Jurassic Gasteropoda, by W. H. Hudleston and Edward Wilson. Nat., Oct. 1893, p. 294.

ALFRED HARKER. NORTH OF ENGLAND.

Bibliography. Papers and Records published with respect to the Natural History and Physical Features of the North of England. Geology and Palæontology, 1892 [containing particulars of 176 papers]. Naturalist, Sept. 1893, pp. 265-279.

ALFRED HARKER AND J. E. MARR. WESTMORLAND.

Supplementary Notes on the Metamorphic Rocks around the Shap Granite [describing the phenomena of metamorphism in a group of basic lavas to the north of the granite, with further observations on the metamorphosed limestones, etc.]. Quart. Journ. Geol. Soc., Aug. 1893, pp. 359-371, pl. xvii.

E. H[AWKESWORTH]. YORK S.E.

Excursion to Withernsea [with the Yorkshire Naturalists' Union, 1st August 1892; describes the Glacial and Post-Glacial Beds of the Holderness Coast and gives list of erratics observed]. Trans. Leeds Geol. Ass., Part 8, 1892-3, publ. 1893, pp. 87-89.

WHEELTON HIND. DURHAM, YORK MID W., LANC. S.

On the Affinities of *Anthracoptera* and *Anthracomya* [describing the species of these lamellibranch genera, many of which occur in the northern coal-fields]. Quart. Journ. Geol. Soc., May 1893, pp. 249-275, pl. vii.-x.

WHEELTON HIND. LANC. S.

Description of a Slab from the Shale above the Kinderscout Grit, Rabchester, Lancashire [with a figure showing shells of *Anthracoptera* attached by their byssi to a piece of wood]. Geol. Mag., Dec. 1893, pp. 540-541.

GEORGE JENNINGS HINDE. YORK N.E.

A Monograph of the British Fossil Sponges: Part III., Sponges of Jurassic Strata [including descriptions and figures of *Rhaxella perforata*, *Corynella langtonensis* (sp. n.), *C. chadwicki* (sp. n.), *Holcospongia floriceps*, *H. polita* (sp. n.), *H. glomerata*, and *Blastina aspera* (sp. n.), all from the Corallian formations of Yorkshire]. Palæontographical Soc., Vol. 47, pp. 189-254; plates x-xix., publ. 1893.

B. HOLGATE. DERBYSHIRE, CUMBERLAND, YORK W.

"Some Examples of Change in Rock caused by the Permeation of Underground Water" [noting the crystallised minerals and nodular concretions of various formations]. Trans. Leeds Geol. Ass., Part 8, 1892-93, pp. 70-74.

G. H. HOLLINGWORTH. LANC. S.

The "Outbursts" at Nook Pit, Broad Oak Colliery [Ashton-under-Lyne]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 11, 1893, pp. 337-342.

HENRY H. HOWORTH. NORTH OF ENGLAND.

The | Glacial Nightmare | and the Flood | a Second Appeal to Common Sense | from the Extravagance of | some Recent Geology | By | Sir Henry H. Howorth, K.C.I.E., M.P., F.G.S., etc. | [3 lines of books] | In two volumes | Vol. I. [and II.] | London | Sampson Low, Marston & Company | [3 lines of address] | 1893 | . . [8vo., cloth, 2 vols., pp. xxviii. + 1-376; and pp. xii. + 377-920; contains a very useful summary of previous work amongst the drifts of England; the author does not believe in the 'land-ice theory' in regard to the origin of the Drift, but thinks the superficial deposits of England (and elsewhere) were formed by a 'flood of waters, a great and rapid flood of water which passed over the country, transporting great boulders in its mighty embrace, and laying down the soft deposits as we find them laid down in a large part of the northern hemisphere'].

W. H. HUDLESTON. NORTHERN COUNTIES, ETC.

On Some Recent Work of the Geological Society [a digest of the general progress made in the past seven years as regards Pleistocene, Tertiary, Cretaceous, Jurassic, Triassic, and Permian Geology; the Presidential Address to the Society]. Quart. Journ. Geol. Soc., May 1893, pp. 65-142.

E. HULL. NOTTINGHAMSHIRE.

Notes on the Water-bearing Capacity of the New Red Sandstone of Nottingham [the permeable Bunter Sandstones, 200 feet thick, underlain by the impervious Permian marls, form a natural reservoir]. Nott. Daily Guard., 15th Sept. 1893; Geol. Mag., Dec. 1893, pp. 553-555; Rep. Brit. Ass. for 1893, publ. 1894, pp. 743-745.

E. HULL. NOTTINGHAMSHIRE.

Note on the Hemlock Stone [an outlying pinnacle left by the action of erosion, not artificially isolated]. Nott. Daily Guard., 19th Sept. 1893; also, with title 'Note on the Himlack Stone near Nottingham,' in Rep. Brit. Ass. for 1893, publ. 1894, p. 769.

WILLIAM FRASER HUME. YORK S.E.

Chemical and Micro-Mineralogical | Researches | on the Upper Cretaceous Zones | of the | South of England: | by | William Fraser Hume, | D.Sc., A.R.S.M., A.R.C.S., F.G.S. | . . . . | 1893 | London: | Printed by Whitehead, Morris & Co. Ltd, 9 Fenchurch St., E.C. [pp. 103, briefly refers to Yorkshire on pp. 33-34; and points out (p. 81) that the Red Chalk of Speeton agrees with the Gault in the rarity of *Textularia turris*].

H. N. HUTCHINSON. NORTH OF ENGLAND.

Extinct Monsters. | A Popular Account of some of the larger | forms of Ancient Animal Life. | By | Rev. H. N. Hutchinson, B.A., F.G.S., | . . | . . | With illustrations by J. Smit and others. | . . [3rd Edition, London, 1893, pp. xxii. + 270; contains (Appendix III.) 'list of British Localities where remains of the Mammoth have been discovered'; taken from Leith Adams' 'Monograph on British Fossil Elephants' (Palæontographical Soc., 1877), and although Cheshire, Lincolnshire, Yorkshire, etc., are mentioned, the localities cited are only a very few of the number now known].

CHESH., DURHAM, NORTHUMB., YORK N.W.

OSMUND W. JEFFS, Secretary.

Third Report of the Committee . . . to arrange for the collection, preservation, and systematic registration of Photographs of Geological Interest in the United Kingdom [with list of 112 additional photographs, 34 belonging to the Northern counties]. Rep. Brit. Ass. for 1893, publ. 1894, pp. 290-298.

E. JONES. YORK MID W.

Report of the Committee . . appointed to complete the investiga- tion of the Cave at Elbolton, near Skipton, in order to ascertain whether Remains of Palæolithic Man occur in the Lower Cave Earth [recording a negative result: forty feet of bone-breccia and three feet of stalagmite had, however, been accumulated before Neolithic Man inhabited the cave]. Rep. Brit. Ass. for 1893, publ. 1894, p. 266.

T. RUPERT JONES. WESTMORLAND.

On Some Palæozoic Ostracoda from Westmorland [describing and figuring nine new species and varieties of *Primitia*, *Aparchites*, *Cytherella*, *Ulrichia*, and *Echmina* from the Dufton Shales and Coniston Limestones]. Quart. Journ. Geol. Soc., Aug. 1893, pp. 288-295, and pl. xii.

A. J. JUKES-BROWNE. LINC. N.

A Boring at Willoughby in Lincolnshire [passed from Glacial Drift into Neocomian, the Chalk being absent: water was found at the top of the Spilsby Sandstone]. Geol. Mag., Mar. 1893, p. 142.

Naturalist.

A. J. Jukes-Browne. North-Eastern Counties, Etc.

The Geographical Evolution of the North Sea. Contemporary Review, 1893; pp. 704-712.

A. J. Jukes-Browne. Linc. N.

On some Recent Borings through the Lower Cretaceous Strata in East Lincolnshire [at Willoughby, Alford, and Skegness, showing that under the boulder-clay an anticlinal axis brings up the Lower Cretaceous along this line, the Chalk being denuded away; map and sections given]. Quart. Journ. Geol. Soc., Aug. 1893, pp. 467-478.

J. D. Kendall. Northern Counties.

The Iron Ores of Great Britain and Ireland; their mode of occurrence, age and origin, and the methods of searching for and working them; with a notice of some of the iron ores of Spain [describing the iron-ores (hæmatite) of Furness and Cumberland, the clay-ironstone of the Coal Measures, the Lower Lias ironstone of Frodingham, the Cleveland seams, the various iron-bearing horizons in the Oolitic series, etc.]. London: Crosby Lockwood & Son, 1893, pp. xvi. +430 [not seen; see review in Mineralog. Mag., Nov. 1893, x. 251].

Percy F. Kendall. North of England.

Ancient Glaciers in the British Isles [a chapter in Wright's Man and the Glacial Period, 2nd Edition, 1893; see Bibliography for 1892, Naturalist, Sept. 1893, pp. 265-279].

P. F. Kendall [Secretary]. Cheshire, Derbyshire, Lancashire, Yorkshire, Isle of Man.

Erratic Blocks of England, Wales, and Ireland. Twenty-first Report of the Committee, consisting of [eleven names; contains numerous records of erratic blocks in Yorkshire, Lancashire, Cheshire, Derbyshire, and the Isle of Man]. Rep. Brit. Ass. for 1893, publ. 1894, pp. 514-524.

Percy F. Kendall. York S.E.

The Cause of the Ice Age [considers the Kelsey Hill beds show no evidence in support of Croll's 'Eccentricity Hypothesis' (p. 64)]. Trans. Leeds Geol. Ass., 1893, pp. 53-70.

Percy F. Kendall. Yorkshire.

The Glaciation of Yorkshire [tracing the course of the Stainmoor ice-stream, first down Teesdale to the sea and subsequently diverted into the Vale of York; two terminal moraines near York City are specially noticed, and it is shown that they must have been over-ridden by their own glacier]. Proc. Yorks. Geol. Soc., Vol. 12, Part 4, 1893, pp. 306-318, with folding map.

Robert Kidston. Lanc. S.

On a New Species of *Bythotrephis* from the Lower Carboniferous of Lancashire [a form of alga obtained from the Shales beneath the Pendleside Limestone at Worston Beck, near Clitheroe]. Proc. Roy. Phys. Soc. Edinb., Vol. 11, 1893, pp. 241-242, pl. x.

Robert Kidston. York Mid W. and S.W.

The Carboniferous Flora of Yorkshire [second, third, and fourth Reports of the Yorkshire Fossil Flora Committee]. Trans. Yorks. Nat. Union, Part 18, publ. 1893, pp. 65-128.

Joseph Lomas. Isle of Man, Lanc. S., Cheshire.

On the Glacial Distribution of the Riebeckite-Eurite of Ailsa Craig [boulders found in the Isle of Man, at Liverpool, Garston, Hale Head, Dawlpool, and Birkenhead]. Rep. Brit. Ass. for 1893, publ. 1894, pp. 707-708.

JOSEPH LOMAS. CHESHIRE.

On a Glacier Mill at Arno Quarry, Birkenhead [a hollow filled with boulder-clay in the Keuper Sandstone of Arno Hill]. Glac. Mag., Oct. 1893, pp. 66-67.

J. LOMAS AND A. R. DWERRYHOUSE. LANC. S.

The Glacial Deposits on the Shore of the Mersey, between Hale Head and Decoy Marsh [describing especially surfaces with strong striæ running N.W., the boulders lying in the clay having their long axes in the same direction and being axially striated; the percentages of the boulders are 64·9 from Lake District, 26·2 Scotch, 1·5 local, and 7·4 Silurian Grits and others of doubtful origin]. Proc. Liverp. Geol. Soc., Vol. 7, Part 1, 1893, pp. 80-87 and plates 1 and 2 (plan).

J. LOMAS AND A. R. DWERRYHOUSE. CHESHIRE.

On some Faults exposed in Arno Quarry [in the Kuyper and Bunter; noting their direction and hade and direction of slickensides]. Proc. Liverp. Geol. Soc., Vol. 7, Part 1, 1893, pp. 118-120 and plate.

W. MCCONNELL [not signed]. DURHAM.

[Investigation of the Amount and Nature of Gases occluded in Coals of the Durham Coal-field; abstract]. Nature, 4th Jan., 1894, p. 232.

H. P. MALET. YORK N.E.

The Kirkdale Cave [giving opinions on Dr. Buckland's views]. Land and Water, 28th Oct. 1893, p. 474.

J. E. MARR. See 'Alf. Harker.' YORK S.E.

J. M. MELLO. NOTTS., DERBS.

Cavern Deposits. The Cresswell Caves [described, and Mammalia found therein enumerated]. Carr's Contrib. to Geol. and Nat. Hist. of Nottinghamshire, 1893, pp. 31-33.

J. M. MELLO. See 'J. W. Carr.' NOTTS.

A. T. METCALFE. NOTTS. AND DERBYSHIRE.

On the Gypsum Deposits of Nottinghamshire and Derbyshire [in the Keuper Marls; mode of occurrence described]. Nott. Daily Guard., 16th Sept. 1893; Rep. Brit. Ass. for 1893, publ. 1894, p. 760.

T. CARTER MITCHELL. YORK N.E.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting a Millstone Grit erratic at Topcliffe]. Nat., Dec. 1893, p. 366.

S. M. MORLEY. LANC. S.

A Boulder unearthed at Eccles [a granite boulder of about 27 cubic feet]. Manch. Guardian, 10th April, 1893.

J. R. MORTIMER. YORK S.E.

Further observations on the Contents of the Howe Tumulus [Duggleby]. Proc. Yorks. Geol. Soc., 1893, pp. 242-244.

G. H. MORTON. CHESHIRE.

Intrusive Boulder Clay [at Bidston (see A. R. Dwerryhouse) contending that the supposed tongues of boulder-clay are really beds in the Keuper]. Glac. Mag., Oct. 1893, pp. 77-79.

E. T. NEWTON. YORK S.E.

Examination of the bones of Animals found in the Tumulus [at Duggleby; recognises remains of *Bos longifrons*, Roebuck, Red Deer, Fox, Pig, and Sheep or Goat; which were found in association with human remains at Howe Hill, Duggleby]. Proc. Yorks. Geol. Soc., 1893, p. 241.

R. BULLEN NEWTON. DERBYSHIRE.

Notes on some Molluscan Remains lately discovered in the English Keuper [Abstract of paper read to Section 'C' of Brit. Ass., 1893, with mention of foraminiferan remains at Chellaston, near Derby]. Rep. Brit. Ass., 1893, publ. 1894, p. 770.

P. W. PICKUP. LANC. S.

Fossils from the Lower Coal Measures [the 'Shale Bed' seam, Rishton Colliery, near Blackburn; a specimen section of the seam sent]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 8, 1893, pp. 237-8.

S. S. PLATT. LANC. S.

Some of the Recent Results of the Investigations into Local Erratic Blocks [briefly described and tabulated, and shown on a sketch-map]. Trans. Rochdale Lit. and Sci. Soc., Vol. 3, 1891-2, publ. 1893, pp. 52-56, and map.

J. POSTLETHWAITE. CUMBERLAND.

Notes on an Intrusive Sheet of Diabase and Associated Rocks at Robin Hood, near Bassenthwaite [with chemical analyses of the rock and of a Skiddaw grit, and microscopical descriptions by Prof. Bonney]. Quart. Journ. Geol. Soc., Nov. 1893, pp. 531-535.

T. MELLARD READE. CUMBERLAND, LANCASHIRE.

Eskdale Drift and its Bearing on Glacial Geology [describing the glacial drift of Eskdale and Wastdale and the distribution of the boulders of Eskdale granite, ascribed to floating ice]. Geol. Mag., Jan. 1893, pp. 9-20.

T. MELLARD READE. NORTH-WESTERN COUNTIES.

Glacial Geology: Old and New [criticising Mr. Kendal's statement of the land-ice theory (in the preceding volume) especially with reference to the distribution of boulders from Scotland and the Lake District]. Geol. Mag., Jan. 1893, pp. 35-37.

T. MELLARD READE. LANCASHIRE, CHESHIRE.

"The Drift Beds of the Moel Tryfaen area of the North Wales Coast" [refers also to Drifts of Lancashire and Cheshire]. Proc. Liverp. Geol. Soc., 34th Session, 1892-3, Vol. 7, Part 1, 1893, pp. 36-79.

T. MELLARD READE. LANCASHIRE, ETC.

High-Level Shelly-Sands and Gravels [discusses at some length the origin of the high-level shell-bearing deposits of England, and concludes by stating 'the submergence theory of the origin of the high-level shelly gravels and sands seems to me by far the simpler of the two theories [i.e., 'Land-ice' and 'submergence'] and most consistent with the facts and phenomena']. Nat. Science, Dec. 1893, pp. 423-435.

F. R. COWPER REED. YORK N.W.

Woodwardian Museum Notes [describing, with woodcut, a carapace of the crustacean genus *Cyclus* from the Carboniferous Limestone near Settle: it resembles *C. harknessi*, but is referred to a new form and named *C. woodwardi*]. Geol. Mag., Feb. 1893, pp. 63-65.

F. R. COWPER REED. YORK N.W.

Woodwardian Museum Notes. Abnormal Forms of *Spirifera* *lineata* (Martin) [from the Carboniferous Limestone of Settle]. Geol. Mag., June 1893, pp. 249-251; pl. xi.

CHARLES RICKETTS. WESTMORLAND, YORK N.W., DERBYSHIRE, LANC. S.

On some Conditions existing during the Formation of the older Carboniferous Rocks [noting the basement conglomerates of Kirkby Lonsdale, Horton-in-Ribblesdale, Shap Wells, Shap Abbey, etc.; also the

evidence of land-surfaces in the Carboniferous Limestone shewn by coal-seams and sometimes eroded floors at Horton, Ingleton, Stony Middleton, Millersdale, and Henridden, near Carnforth]. Proc. Liverp. Geol. Soc., Vol. 7, Part 1, 1893, pp. 94-106.

CHARLES ROEDER. LANC. S.

List of Shells from the Lower Boulder Clay at Heaton Mersey, near Manchester, with remarks thereon [naming 17 species of mollusca found, together with some polyzoa; some notes on the boulders are also given]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 6, 1893, pp. 206-210.

A. C. SEWARD. LANC. W.

On the Genus *Myeloxylon* (Brong.) [describing plant remains found near Caton, Lancaster, in a limestone of Millstone Grit age]. Ann. of Bot., Vol. 7, No. 25, March 1893, pp. 1-20, pls. 1-2.

A. C. SEWARD. LANC. S.

On a New Fern from the Coal Measures [near Oldham; described as a new species under the name *Rachiopteris williamsoni*]. Abstract, Camb. Univ. Reporter, 7th Feb. 1893.

JAMES SHIPMAN. NOTTINGHAMSHIRE.

Lecture on Local Geology at Mansfield [a general account of the Carboniferous strata of the district, with references to important faults, of the Permian series and of the New Red Sandstone]. Trans. Nation. Ass. Colliery Managers, Vol. 4, 1893, pp. 372-390, with two plates of sections.

[J. SHIPMAN.] NOTTINGHAMSHIRE.

Excursion to the Hemlock Stone [by members of the British Association; the stone shows what is considered to be the base of the Keuper resting on the Bunter; barytes occurs in both; the Bunter Pebble-beds were examined in Stapleford Hill]. Nott. Daily Express, 19th Sept. 1893.

[J. SHIPMAN.] NOTTINGHAMSHIRE.

Excursion to Mansfield [by a party from the British Association; account given of the Mansfield Red Sandstone (belonging to the Magnesian Limestone), of the Lower Mottled Sandstone, of the unconformable junction of Permians on Coal-measures at Kimberley with the basal breccia, and other features of interest]. Nott. Daily Express, 19th Sept. 1893.

J. SHIPMAN . . AND J. W. CARR. NOTTS.

Appendix. | — | Bibliography—Geology [giving about 80 titles, 1829 to 1892]. J. W. Carr's Contrib. to Geol. and Nat. Hist. of Notts., 1893, six unnumbered pages following p. 90.

J. SHIPMAN. See 'J. W. Carr.' NOTTS.

WILLIAM SHONE. LANC. W.

The Cause of Crateriform Sand Dunes and Cwms [describing dunes at St. Anne's-on-the-Sea]. Geol. Mag., July 1893, p. 323.

JAMES SPENCER. YORK S.W., N.E., LANC. S. AND W.

Glacial Boulders in Calderdale. Nat., March 1893, pp. 75-79.

JAMES SPENCER. YORK S.W.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting various erratics at Luddendenfoot, Sowerby Bridge, North Dean, Elland, and Mirfield]. Nat., Dec. 1893, p. 367.

J. W. STATHER. YORK S.E.

The Yorkshire Boulder Committee and its Seventh Year's Work [reporting a dolerite boulder between Atwick and Skipsea]. Nat., Dec. 1893, p. 367.

J. W. STATHER. YORK S.W.

[Geological Observations made by] Yorkshire Naturalists at Askern [15th June 1893]. Nat., Oct. 1893, pp. 291-292.

J. W. S[TATHER]. YORK S.W.

Excursion to Askern [15th June 1893; to examine glacial deposits and Magnesian Limestone]. Trans. Leeds Geol. Ass., Part 8, 1892-3, p. 99.

MARK STIRRUP. LANC. S.

Further Notes on Boulders from the Coal Measures [at Dukinfield, Wigan, and Bacup: some petrological notes by Prof. Bonney are given]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 11, 1893. pp. 321-331.

THOS. TATE. YORK S.E., N.E., N.W., MID W.

The Yorkshire Boulder Committee and its Sixth Year's Work. Nat., April 1893, pp. 109-111.

THOMAS TATE. WESTMORLAND, CUMBERLAND.

Lake Country Rocks: Microscopically Described. Nat., Aug. 1893, pp. 247-251.

THOMAS TATE. YORK N.W., MID W., N.E., S.E.

The Yorkshire Boulder Committee and its Seventh Year's Work. Nat., Dec. 1893, pp. 363-368.

R. H. TRAQUAIR. DURHAM.

Notes on the Fossil Fish from the Marl Slate [from No. 2 Shaft, Deaf Hill Colliery, Co. Durham; *Palæoniscus freislebeni*, fragments of *Pygopterus humboldtii*, the rare *Dorypterus hoffmani*, and *Acentrophus glaphyrus*]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 6, 1893, pp. 194-196.

J. STANLEY TUTE. YORKSHIRE, DURHAM.

On some singular Nodules in the Magnesian Limestone [describing some singular nodules of impure silicate of lime, and giving particulars of an analysis]. Proc. Yorks. Geol. Soc., 1893, pp. 245-6.

J. STANLEY TUTE. YORK MID W.

The Occurrence of a Tooth of a Mastodon in the Glacial Drift [briefly noting the find of a tooth of Mastodon in a 'pit of glacial drift' near Ripley]. Proc. Yorks. Geol. Soc., 1893, p. 246.

GEORGE ROBERT VINE. YORKSHIRE, ETC.

Notes on the Polyzoa, Stomatopora, and Proboscina Groups, from the Cornbrash of Thrapston, Northamptonshire [refers to Yorkshire specimens, etc.]. Proc. Yorks. Geol. Soc., 1893, pp. 247-258.

E. R. W[AITE]. YORK N.E.

Excursion to Coxwold and Byland [with Yorkshire Naturalists' Union, 15th Sept. 1892, giving some notes on the Corallian series of the district]. Trans. Leeds Geol. Ass., Part 8, 1892-3, pp. 94-95.

ALFRED R. WALLACE. NORTHERN COUNTIES.

The Ice Age and its Work. I. Erratic Blocks and Ice-Sheets. Fortnightly Review, Nov. 1893, Vol. 60 (N.S., Vol. 54), pp. 616-633.

ALFRED R. WALLACE. NORTHERN COUNTIES.

The Ice Age and its Work. II. Erosion of Lake Basins. Fortnightly Review, Dec. 1893, Vol. 60 (N.S., Vol. 54), pp. 750-774, and woodcut.

JOHN FRANCIS WALKER. YORK N.E.

On the Brachiopoda recently discovered in the Yorkshire Oolites [describing *Thecidea ornata* Moore, from the Coral Rag near Scarborough, and *Terebratulina substriata* nov. var. *suffieldensis* from the

Lower Coral Rag of Suffield]. Ann. Rep. Yorks. Phil. Soc. for 1892, publ. 1893, pp. 47-51.

W. WATTS. YORK S.W. AND LANC. S.

Singular Nodules and Ice-worn Stones found in the Boulder Clay of the Piethorn Valley [five miles N.E. of Rochdale; hollow nodules are found, besides large boulders of Millstone Grit, fossils from the Lias, Mountain Limestone, etc.]. Trans. Manch. Geol. Soc., Vol. 22, Session 1893-94, Part 13, 1893, pp. 436-442.

GEORGE WILD. LANC. S.

Method and Value of Fossil Collection in Coal Mining [discussed in detail from experience in the N. and S.E. portion of the Lancashire Coal-field]. Trans. Manch. Geol. Soc., Vol. 22, Session 1892-93, Part 7, pp. 222-227.

WILLIAM CRAWFORD WILLIAMSON. LANC. S., YORK S.W.

General, Morphological, and Histological Index to the Author's Collective Memoirs on the Fossil Plants of the Coal Measures. Part II. [a further summary of the Author's works, dealing principally with the *Lepidodendroid* plants, prefaced by a 'List of Works on the Organisation of the Fossil Plants of the Coal Measures,' and general index to their contents]. Mem. and Proc. Manchr. Lit. and Phil. Soc., 1892-3, Vol. 7, No. 2, pp. 91-127.

W. C. WILLIAMSON. NORTHUMBERLAND, LANC. S., YORK MID. W.

On the Organisation of the Fossil Plants of the Coal-Measures. Part xix. [describing *Lepidodendron harcourti* from near Rothbury and Dulesgate, *Lepidophloios* from Wakefield, and *Lepidostrobus* from Soothill, near Dewsbury, and from Oldham (*L. oldhamium* n.sp.)]. Phil. Trans. Roy. Soc., Vol. 184B, 1893, pp. 1-38, plates 1-9.

HENRY WOODS. NORTH OF ENGLAND.

Cambridge Natural Science Manuals | Biological Series. | . . | . . Elementary | Palæontology | Invertebrate | By | Henry Woods, B.A., F.G.S. | Cambridge | at the University Press. | 1893. | . . [Small 8vo., cloth, pp. viii. + 222 : very general references to localities and distribution].

H. WOODS. NORTHERN COUNTIES, ETC.

Woodwardian Museum, Cambridge. Catalogue of the Fossils in the Students' Stratigraphical Series, 1893. 8vo., pp. 23. University Press, Cambridge.

A. SMITH WOODWARD. YORK N.E.

On some British Upper-Jurassic Fish-remains, of the Genera Caturus, Gyrodus, and Notidanus [including *G. punctatus* Ag., Corallian (Lower Calc. Grit), Malton]. Ann. and Mag. of N.H., Nov. 1893, pp. 398-402 and plate 18.

HENRY WOODWARD. LANC. S.

Note on a new British Species of Cyclus from the Coal-Measures of Bacup, Lancashire [a small crustacean carapace described and figured under the name *C. scotti*]. Geol. Mag., Jan. 1893, pp. 28-29.

HORACE B. WOODWARD. LINCOLNSHIRE, CHESHIRE, CUMBERLAND.

The Jurassic Rocks of Britain. Vol. iii. The Lias of England and Wales (Yorkshire excepted) [giving a general account of the Lower, Middle, and Upper Lias, their division into zones, and their characteristic fossils, followed by a description of their local development from south to north; chapters on the economic products and a catalogue of fossils are appended]. Mem. Geol. Surv. Eng. and Wales, 1893, pp. xii. + 399. Reviewed in Geol. Mag., Feb. 1894, pp. 85-87.

G. FREDERICK WRIGHT. NORTH OF ENGLAND.

Man and the Glacial Period. Second Edition, pp. xiv. + 385. London, 1893 [see Bibliography for 1892, Naturalist, Sept. 1893, p. 279].

NEW CUMBERLAND ANNELIDS.

Rev. HILDERIC FRIEND,

Ocker Hill, Tipton, Staffordshire.

In January last I visited Carlisle, and during a walk by the Eden collected a quantity of material which I have as yet only partially examined. It is gratifying, however, to be able to report several species of annelids of the smaller kinds which are new to Britain. I confine my report to-day to the minute white worms of the genus *Fridericia*, which were at the time of my visit very abundant and active. The season was mild, and the worms were working at the surface of the ground, at the roots of grasses, under decaying leaves and refuse, or in similar situations. The species which I am about to report have only been discovered within the last year or two for the most part, and are therefore not described in Beddard's splendid 'Monograph of the Oligochæta.' As no account of them appears in any English journal or other scientific publication my notes will be sufficiently full to allow of their being identified by future collectors.

The genus *Fridericia* consists of a number of worms, now amounting to about twenty well-defined species, the chief and most striking peculiarity of which lies in the arrangement and shape of the setæ. In the hinder portion of the body they are quite frequently paired, but in the anterior region they are with one exception almost always arranged in bundles of four, six, eight, or ten, the inner pairs of which are noticably smaller than the outer. When the older setæ are falling away an odd number will often be found in a bundle, as three, five, seven, or nine; but the rule is for the bundles to consist of one to five pairs. They are usually straight, or with a slight bend at the inner extremity, which gives them the appearance of a fairy walking stick. In a new species which I have received from Ireland (*Fr. ulmicola* Friend, described for 'The Irish Naturalist,') the bend is practically right-angled. There is a pore between the head and first segment, known as the head-pore, and dorsal-pores are present in most of the species, if not all—a peculiarity so far restricted to this genus among the Enchytræids. Salivary glands or the so-called pepto-nephridia occur, and afford a good clue to character, as do also the well-marked spermathecæ which lie in segment five, and open into the epidermis between segments four and five by means of a duct of varying length. Thus, with the setæ in pairs

of different sizes, the dorsal pores, salivary glands, and spermathecæ for guides it is easy to distinguish *Fridericia* from all the other genera in this large family. The worms are white, and range from about a quarter of an inch to an inch in length. Their function is as yet little understood. I have found none of them, hitherto, playing the part of pests, but in every instance they have been feeding on decaying vegetable matter, and thus they seem to be specially adapted to act as nature's scavengers.

My first addition to our lists is named

Fridericia agricola Moore. Fortunately, the author's diagnosis and drawings are so clear that there can be no hesitation as to the identity. The worm is half-an-inch or more in length, and consists of about 65 segments, on the hindermost of which are four pairs of strong setæ. In front the setæ are also in four bundles, the two dorsal sets having two, three, or four setæ, the ventral usually four, five, or six. The innermost are the smallest, and all are hooked internally. The salivary glands are branched, and have much the shape and appearance of a hydra with tentacles expanded. They are, however, transparent or hyaline. The girdle extends from the middle of segment 11 to the middle of 13, and in the adult the setæ on 12 disappear, and give place to a pair of glands or pores. The nerve cord has no swellings or glands, and the brain is convex behind. The spermathecæ have a characteristic shape, and I have been very careful to compare these with the drawings supplied by Moore. A pair of sacs or diverticula will be found attached to the interior base, while the exterior opening is without glands. It was first described by Mr. J. P. Moore in Proc. Acad. Nat. Sc. Philadelphia, 1895. Plentiful in early spring at Wayne, Delaware County, Pennsylvania. Now first recorded for Great Britain, as being found by the Eden, Carlisle, January 1898.

In the same locality and at the same time I found two other species of *Fridericia* described by Moore, and now for the first time recorded as British.

Fridericia parva Moore is the smallest species yet recorded. It is under half-an-inch long, and is made up of 40 to 45 segments. The setæ are arranged as in the foregoing, except that there are only two pairs in the front bundles. The spermathecæ are simple, devoid of the diverticula which often accompany the main sac; the tube being about four times as long as the pouch, without glands. The salivary glands are not branched, but have a bulbous enlargement of the mouth. The dorsal pores commence as in the previous case in segment 7. Description and date as before.

Naturalist.

Fridericia alba Moore is a third species new to Great Britain found in the same locality, and first described by Moore with the two foregoing. It has from 55 to 60 segments, and is about ¾ in. in length. The setæ resemble those of *F. agricola* in number and disposition, but the spermathecæ are closely allied to those of *F. parva*. The salivary glands are sometimes, if not always, branched. The brain is nearly oblong, and slightly emarginate behind.

Fridericia bulbosa (Rosa) was found at the same time and very carefully studied with various reagents and living material. There can be no doubt about the identity. I have compared my notes with Rosa's original memoir, as well as Beddard's résumé ('Monograph of Oligochæta,' p. 343). The main feature is the spermathecæ without diverticula, and ducts twice as long as pouch with glands at the base. Hitherto reported for Germany and Italy only. I have examined specimens from Rugby as well as Carlisle.

Fridericia striata (Levinsen), already reported to 'The Naturalist,' may now be recorded for other localities. Clifton Park, Cumberland, and Broughton, two miles from Cockermouth, are also its habitats.

It would greatly aid me in these researches if collectors would send me any small worms they may meet with when collecting. Particulars as to habitat, date, proximity to water, and whatever else may occur to the collector are invaluable.

NOTE—BOTANY.

***Trifolium striatum* and *Vicia lathyroides* at Market Weighton.**—During the spring of both 1897 and 1898 I have gathered two plants new to this district, *Trifolium striatum* L., the Knotted Clover, and *Vicia lathyroides* L., the Spring Vetch. Both were found on sandy, gravelly soil, and are interesting additions to the Market Weighton flora. The trefoil has been recorded previously for the East Riding at Brough, but so far as I am aware there is no previous record for the vetch. Both plants occur in several places in the Vale of York, though never very abundantly.—J. J. Marshall, Market Weighton, 17th September 1898.

NOTE—CONCHOLOGY.

***Viviparus contectus* near Askern.**—Having spent last week-end at Askern in company with a friend, we took the opportunity to pay a visit to Trumfleet Marshes in search of *Viviparus contectus*, as recorded by Mr. W. J. Clarke, of Scarborough, in 'The Naturalist,' October, 1893, p. 304, and found that it still occurs there in considerable numbers, as we counted 35 specimens in about as many yards, besides many which we must have missed owing to the weeds which grow abundantly in the dyke.—J. E. Crowther, Portland Street, Elland, 10th September 1898.

GEOLOGY IN HULL.

Transactions | of the | Hull Geological Society | for the | Session 1893-4. | ——Volume I. | — | Hull: | Printed for the Society by F. Smith, Eaton Street, Lowgate. | Price One Shilling. [8vo., 25 pages and frontispiece].

The same for **1894-95, Volume II.** [8vo., 23 pages and frontispiece].

The same for **1895-96, Volume III.** [8vo., 27 pages, frontispiece, and 2 folding tables].

Of the activity of the Hull geologists, these three parts of transactions, with their record of successful and well-directed investigation of their immediate district, is ample proof, and we look forward with keen anticipation to seeing further instalments. Each of the parts has an excellent photograph for frontispiece, the first representing an ancient forest-bed in Chalk Lane, Hull, the second the gravels underlying boulder clay at Southfield, Hessle, and the third being that well-known object, St. Austin's Stone.

Richly-deserved prominence is given to the investigation, systematic and well-planned, of the boulders of the East Riding, for which purpose an East Riding Boulder Committee was formed by the Society.

The numerous excursions of which reports are given show that every chance is taken of studying geology in the field, and abstracts are given of the various lectures and papers given at the evening meetings, and a bibliography of works relating to the geology of East Yorkshire and North Lincolnshire published in 1895, is included in the third volume.

The fact that most of the papers are given 'in abstract' only leads us to the abstract remark that, as regards local societies, it would be of greater interest to give local original papers in full, and to make room for them by still more severely condensing (or omitting all but the title) of papers dealing with general problems or non-local geology. What concern, for instance, has the Hull Society with Alpine glaciers or the geology of Central Africa, when space is urgently required for the full text of a paper on some branch of East Riding geology. We have to congratulate the Society upon its work and its prosperity, and to wish it every success in the future.

BOOK NOTICE.

We are indebted to Mr. **Thomas Sheppard,** the energetic Secretary of the Hull Scientific Club, for a paper by him on **'The Hessle Chalk Quarries.'** It runs to 8 pages of crown 8vo, and bears date 1898 and the imprint of William Andrews & Co., of London. If a reprint, it bears no mark thereof. The chalk quarries are described, and the contained fossils noted.

TRACES OF AN ANCIENT LAKE-DWELLING AT SAND-LE-MERE, NEAR WITHERNSEA, EAST YORKSHIRE.

THOMAS SHEPPARD,

Hull; Hon. Sec. Hull Scientific and Field Naturalists' Club.

The excavations which were made at Ulrome, near Skipsea, in Holderness, by Mr. Thos. Boynton, of Bridlington, some years ago, threw a great amount of light on the habits of the former inhabitants of Holderness. At a depth of four feet, near the edge of a hill, which to-day is called 'Goose *Island*,' a well-planned and carefully-built structure was met with. This consisted of a platform of enormous dimensions, which had been held in position by piles driven into the bed of the old lake; the whole being weighted down and supported by stakes driven in at an angle. Under and around this platform were found numerous implements and utensils of Ancient-British workmanship, together with a large quantity of bones, usually broken, of ox, horse, deer, pig, etc. This extensive collection was shewn to the writer by the courtesy of Mr. Boynton a short time ago.

The excavations shewed that there had been two platforms. With the lower one, which was built upon roughly-pointed piles, very coarse pottery and implements of stone were found. Upon this had been erected another structure, of similar dimensions, but at a time when the use of metal had been introduced. This latter was consequently of a better finish, and it was found that the piles used for its construction had been sharpened by a metal instrument, and some of them were even penetrating the timbers previously existing. Between the two platforms was found a bronze spear-head, which seems to indicate that the upper one was built by the 'Bronze-Age' Britons—the lower platform being constructed by the earlier people of the 'Stone-Age.'

From the evidence obtained by Mr. Boynton (see papers by Mr. J. W. Davis, F.S.A, on 'The Lake-Dwellings in East Yorkshire,' Proc. Yorks. Geol. & Polyt. Soc., 1889, pp. 101-113; by Mr. T. M. Evans, 'The Ancient Britons and the Lake-Dwelling at Ulrome in Holderness,' in 'The Hull Quarterly,' 15th Jan. and 15th April 1885; and Mr. T. Tindall Wildridge, 'Lake-Dwellings of Yorkshire,' in Andrews 'Bygone Yorkshire,' 1892), it seems clear that at one time Holderness was a country of meres and bogs, the glacial mounds appearing as islands, and would present an aspect somewhat similar to the Norfolk Broads of to-day. In the shallows of the meres the Ancient Britons doubtless built their pile-dwellings; being thus safe

from the numerous wild animals, and also protected from their more formidable enemy—man. In Scotland, Ireland, and on the continent (especially in Switzerland) such dwellings have been met with in similar surroundings, and there can be little doubt that the remains of several lie buried in Holderness. The relics of British workmanship which are occasionally found in the beds of streams and other similar situations in this district may owe their presence to their proximity to one of these ancient habitations.

On an excursion of the Hull Geological Society to Skipsea, in 1894, the end of a stake, which had certainly been pointed artificially, though in a very rough manner, was found at a depth of about four feet in the peat near the northern end of the Skipsea lacustrine deposit which is exposed in section in the cliffs. It was found at an angle of 45°, with the point downwards beneath a dense mass of twigs and 'brushwood,' containing hazel nuts and acorns, a foot in thickness. A precisely similar bed was discovered in association with the dwellings at Ulrome. (See Trans. Hull Geol. Soc., Vol. II., 1894-5, p. 12.)

On the Saturday previous to the excursion of the Yorkshire Naturalists' Union to Spurn on Bank Holiday last, Mr. H. B. Muff, of Bradford, and the writer paid a visit to the peat bed and lacustrine deposit at Sand-le-Mere, about two miles north of Withernsea. Thanks to the strong wind and rough sea of the preceding day, a large expanse of peat was laid bare on the beach just above low-water mark. It was exposed better than I have ever seen it previously. Trunks of fir and other trees were lying in the clay; these, though perfect in form, were very rotten and almost as easily carved as the mud in which they occurred. Of greater interest, however, were some of the 'stools' of the trees, still in the position in which they grew, and with their roots penetrating the clay in all directions. One of these 'stools' measured nearly two feet in diameter.

The peat bed was exposed from a point just below the coastguards' station, to a few hundred yards north, where the cliffs suddenly get higher; as long, in fact, as the bank of sand-dunes at the top of the beach, which stretches across the bed of the old mere from which 'Sand-le-Mere' derives its name.

Towards the north end of the peat, at a distance of about eighty yards from the cliffs, and at a depth of about ten feet from the top of the beach, or fifteen feet from the surface of the sand-dunes, the tops of a line of piles were observed sticking

out of the soft clay which underlies the peat-bed. These extended for about five yards, and were from a few inches to a foot apart. On pulling one or two out, which was done with great difficulty, owing to the rotten nature of the wood, it was found that the points only of the stakes remained, the rest in all probability having been denuded by the sea, along with the peat, etc., which covered them. The piles were very black and soft; in this respect resembling the wood found elsewhere in the peat and clay. They were about 2½ inches in diameter and had undoubtedly been pointed by a sharp metal instrument. What seemed to be of great importance, however, were some pieces of round wood, of smaller diameter, which had been bent and worked in between the upright piles, thus binding them together in a manner resembling basket-work on a large scale. These horizontal pieces were met with in several places. They had been very cleverly bent so as to go round the perpendicular piles, and on the opposite side of the wood to each bend a slight cut could usually be detected; which would no doubt facilitate the bending operation without the risk of breaking. Some of the piles and a few of the pieces of wood just described were brought away, and on drying, have cracked and folded over in the manner so characteristic of the wood from these ancient structures.

Unfortunately, the time at our disposal did not permit of any extensive excavations being made, and it is possible that, had this been done, some further evidence might have been brought to light. A few yards to the north, at the same level, the bare boulder clay was exposed on the beach, which shews that the piles were driven in near the edge of the lake bed—boulder clay, of course, underlies the whole of the peat and everything connected with it.

In the absence of implements, pottery, broken bones, or other signs of a dwelling, there is no *positive* evidence that these piles, etc., are the remains of an ancient habitation; but, having regard to their present state of preservation, their characteristic splitting on drying, their position on the edge of the old lake bed, their depth below and distance from the cliffs, and also bearing in mind the fact that similar remains of lake-dwellings have been found elsewhere in the district, it is probable that the Sand-le-Mere piles represent the remains of such dwelling. These notes are therefore put together in the hope that future visitors to the locality will keep a sharp look-out for further evidence on the subject.

October 1898.

NOTES—MAMMALIA.

Otters in Littondale.—In the morning of 3rd August 1898, a fine Otter (*Lutra lutra*) was seen by a farmer's son in the beck between Litton and Halton Gill, about half-a-mile from the latter place. It is twelve months since one of these rare visitors was seen in the same locality. Several years ago, three Otters were taken near Hawkswick. They are to be seen in a glass case at the Falcon Inn, Arncliffe.—W. A. SHUFFREY, The Vicarage, Arncliffe.

Remains of the Red Deer, from the Peat Bed at Withernsea.—Whilst staying at Withernsea in July last, I obtained from Mr. T. Pygas some bones of the Red Deer (*Cervus elaphus*) which he had dug from the peat bed, exposed at low tide, a few yards north of the pier, or what is left of it. It is only occasionally, when the sand is swept off, that this peat can be properly examined, and at such times Mr. Pygas makes it a practice to thoroughly explore it, and in this way has secured some interesting finds. The specimens under notice consist of the skull, lower jaw, and atlas and axis vertebræ of a fully grown, though by no means old, individual. Unfortunately the skull is broken, but I am hoping to be able to restore it. The teeth, both in the upper and lower jaws, are very perfect. Two large horn bosses exist on the top of the skull, from which the antlers have been shed, not broken.

An antler of the Red Deer, from the same bed, adorns the walls of the 'Spread Eagle' at Withernsea, owned by Mr. Pygas, senr.

I should like to take this opportunity of pointing out that the remains of various animals obtained from the so-called 'Forest Beds' on the Holderness Coast are of *Post-Glacial* age, and are not in any way connected with the 'Forest Bed Series' of the Norfolk coast. The whole of the peat beds on our coast rest *upon* the boulder clay; those at Norfolk are *under* the glacial beds, and are consequently of much greater age and contain relics of an entirely different fauna.—THOMAS SHEPPARD, 78, Sherburn Street, Hull.

Bones of a Whale in the Trent Valley near Newark.—A few weeks ago Mr. Alfred C. Elliott, of Newark, wrote a note to the 'Nottinghamshire Guardian' recording the discovery of some huge bones at Farndon Field, near Newark. This letter was shown to me by a friend, and after communicating with Mr. F. M. Burton, of Gainsborough, it was decided that the specimens should be examined. Mr. Elliott afterwards kindly conducted the writer to the place where they were found, and pointed out many items of geological interest en route. The bones were obtained from the alluvium, not far below the surface, on the banks of the waterway owned by the Newark Navigation Company, at a distance of about 1¼ miles south-west of Newark Station. They were first noticed by some fishermen whilst digging for bait, and the enormous size of the bones at once aroused their curiosity and they were consequently dug out. Two large pieces are now in the yard of Mr. Horace Mill's Basket Works, whilst a third portion was thrown into the water and lost—a trick quite characteristic of the average British 'sportsman.' As was expected from the descriptions given by Mr. Elliott, the bones proved to be those of a whale. There were two pieces: one long and narrow, measuring 7 feet 6 inches by 1 foot 3 ins. wide. The other, a broken piece, was 3 feet long and measured 4 feet 6 inches in circumference. Originally, both had been joined together and would be a very fair example of one side of the lower jaw of a whale. The stout piece represents the thick end of the bone where it joins on to the skull. Specimens of this description are common enough in the vicinity of Hull, where they are used as gate-posts, etc., but Newark seems rather an out-of-the-way place for them. As to the age of the bones there is some uncertainty. It is quite possible that they merely represent a specimen brought from the Humber by one of the smaller craft which ply up and down the Trent, though it is hardly likely that the specimens would have been buried, seeing that they can be put to such good use in a variety of ways. In any event, the find may be of interest to some readers of 'The Naturalist,' and our best thanks are due to Mr. Elliott (who, though professedly not a geologist, has a great interest in natural history) for having called attention to them in the first instance.—THOMAS SHEPPARD, 78, Sherburn Street, Hull, 10th August, 1898.

NATURAL HISTORY NOTES FROM THE TERRINGTON CHURCHWARDENS' ACCOUNTS.

JOHN WRIGHT,
Terrington.

Our oldest Churchwardens' account book commences in the year 1795-6 and ends 1861. I have looked through the various entries on its 220 pages and find that the destruction of 49 animals named the Foulmart or Polecat (*Putorius putorius*) have been paid for as under. The only other animal is the Mole (*Talpa europæa*) which occurs in the single item in the year 1807-8. Waterton says, 'I am a friend to the Weasel, and to its congener the Polecat—although I know that they will commit depredations on game, whenever an opportunity shall occur. Still, I consider that the havoc which they make amongst mice and rats far overbalances their transgressions against the game laws.' And again, on beauty in the animal creation, 'The stinking Polecat, shunned by most people and persecuted by everybody, presents to our view a symmetry of no ordinary beauty. The length of his body is wonderfully adapted to that of his neck; and when he carries his prey there is such a stateliness in his whole contour, that it is impossible not to be struck with the elegance of his motions.'

1802-3	Paid to Arth^{r} Pickering for 2 Foulmarts ...	—:— :8	
1805-6	To W^{m} Haythorn for a foulmart Head ...	—.—.4	
	Paid Rob^{t} Hall for a Foulm^{t} Head	—. —.4	
1806-7	Jan^{y} 8th 2 Foulmarts Heads	—.—.8	
1807-8	Paid W^{m} Nash for catching a Mole in the Churchyard	—.—.6	
	Paid W^{m} Skelton for five foulmarts	—: 1 :8	
	Paid Jn^{o} Wright for 1 Do.	—.—.4	
1808-9	July 29 Paid George Nelson for 2 foulmarts	—. .8	
	Paid Tho^{s} Tefsy (Tefseyman) for Do.	—: 1 :	
	Paid Bland's boy for 1 do.	— . .4	
	Paid Tho^{s} Hardisty for 1 do.	—. —.4	
	Paid W^{m} Skelton for 3 do.	—: 1 :	
1809-1810	Mar: 7 Paid Bour (Bower) Boy for 2 foumarts heads	— . .8	
	Mar. 27 Paid edw hardisty Skilton and Rob^{t} Hall for 5 ditto	—: 1 :8	
1813-4	Nov: 5 To John Holliday for Foulmart Head	—. —.4	

1814-5	Jan^{y} 10	Paid W^{m} Walker & Skelton for			
		2 foulmarts	—	—	8
1815-6		two foulmart^{s} heads	—	—	8
1818-9		To J. Beedale for 4 Marts Heads	—	1	4
1820		5 Foulmarts	—	1	8
1824-5		3 Foulmart Heads	—	1	—
		1 Foulmart Head	—	—	4
1827	Jan^{y} 12	2 Foulmarts Heads...	—	—	8

NOTES—BOTANY.

Fossdyke Plants.—Mr. J. T. Sneath and I took the following plants on the Fossdyke bank, Lincoln, Div. 13, on Thursday, the 4th of August :—*Melilotus cærulea, M. indica, M. arvensis* Wallr., *Vicia pseudo-cracca, V. hybrida, Erysimum perfoliatium, Lepidium draba, Silene cucubalus, Matricaria inodora, Anthemis nobilis, Chenopodium vulvaria, Lathyrus erythrinus* or *angulatus, L. alphaca, Sisymbrium pannonicum, Echium plantagineum.* I have never yet visited this spot without finding something new to the county.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 6th Sept. 1898.

Grimsby Plants.—During 1897 and 1898 I have received, amongst many other specimens, the following from Messrs. E. V. Wood and A. Smith, of Great Grimsby, all gathered in that town or neighbourhood :—*Medicago falcata, Bromus tectorum, B. rigidus, Centaurea aurea, Salvia officinalis, Arthrolobium ebracteatum, Bromus squarrosus, Medicago sylvestris, Leonurus cardiaca, Echium plantagineum, Polypogon monspeliensis, Briza maxima, Lagurus ovatus.* The two last are garden escapes or outcasts.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 6th Sept. 1898.

***Verbascum virgatum* in Furness, and the Vitality of its Seeds.**—Miss E. Hodgson, in her 'North or Lake Lancashire' in Journal of Botany, 1874, recorded *Verbascum virgatum* With. from Roosebeck, on the authority of a specimen found by Mr. R. Ashburner, of Ulverston. It so happens that I now inhabit the house in which this Mr. Ashburner's father lived. The finder, then little more than a boy, collected plants and dried, or tried to preserve them; and *Verbascum*, being scarce, was so treated. If the specimens were not satisfactory they were relegated to an old summer house in the garden, and during the periodical sweeping out these specimens found their way to the rubbish heap. All this happened years ago—how long I cannot tell with certainty, and the date given below is well within the mark. In course of time the garden became neglected, and finally the house was empty for two years. Early in 1895 I took it and set a man to work on the wilderness to try and make a garden out of it. Every bit, paths included, was turned over once at least. During the summer of 1896, three plants appeared which I could not name, but, in 1897, they proved to be this species. This year one plant, making the fourth, is now in flower amongst some perennial sunflowers. No one except Mr. Ashburner and Miss Hodgson has seen the species either as a wild, or so far as I know, as a garden plant in this district. To put it as mildly as possible, the seeds must have been over 10, if not 15, years without germinating! Lest suspicion should fall on me, I can truly say I have never grown native N. Lancs. plants, taken from a wild habitat, in my garden, and I never intend to do so; for then I can blame those who take our good species away, otherwise, I cannot. As a member of the Selborne Society, too, my aid must be given to prevent destruction. Further, as a field man only, I have no personal use for dried plants.—S. L. Petty, Ulverston, 1st August 1898.

BRITISH BIRDS.

An | Illustrated Manual | of | British Birds, | By | **Howard Saunders, F.L.S., F.Z.S.,** &c. | Second Edition, Revised. | With illustrations of nearly every species. | [Publishers' monogram] | London: | Gurney & Jackson, 1, Paternoster Row. | (Successors to Mr. Van Voorst.) | To be completed in twenty parts.

Of this standard work in its new edition we have received eight parts, published in the months November 1897 to June 1898, and we are indebted to the publishers for the loan of one of the cuts, which will be of special interest to readers of 'The Naturalist,' inasmuch as it is from the ♀ example of the Greenish Willow-Warbler (*Phylloscopus viridanus* Blyth) which Mr. G. H. Caton-Haigh shot at North Cotes, Lincolnshire, on the 5th Sept. 1896.

The Greenish Willow-Warbler (*Phylloscopus viridanus* Blyth).

Shot at North Cotes, Linc. N., 5th Sept. 1896, by G. H. Caton-Haigh.

The book itself is so well known and so classic a work as to need but few words to commend this second edition to the notice of our readers. The necessity of condensation requisite to include all the British birds in a single volume allows but a single leaf of two pages to each species, and it need hardly be said that Mr. Howard Saunders utilizes the space to the greatest advantage. The publishers are to be congratulated on the excellence of the turn-out of the work, and we look forward to noticing the succeeding parts as they appear.

NOTE—GEOLOGY.

Glacial Boulders in Swaledale. -When at Richmond Castle a few days ago, I noticed in the inside curtain-wall, between the ancient oratory of St. Nicholas and the chapel of the garrison, a boulder of basalt (whinstone), about 12 inches by 6 inches, as seen on the surface, derived either from the Teesdale or Cleveland dykes. It has evidently been dug out of the local drift and split for a wall-stone by the Norman or Breton builders of the castle in 1070-1. Probably this is the first record of this rock having been found in the Swale valley, though my friend Mr. Joseph Raine informs me that in the course of excavations at the site of his new house in Earl's Orchard on the opposite side of the valley to the castle, he has met with several boulders of the same stone, one of them, he says, being 'as much as two men could lift.'— HARRY SPEIGHT, Bingley, 28th July 1898.

BIRD-NAMES IN USE AT WEST AYTON, YORKSHIRE.

Rev. W. C. HEY, M.A.

My attention was first drawn to the bird-names in use at this village by hearing a boy call a Chaffinch a 'Weetie.' Soon after I heard some one express a desire to cage a nest of 'Redcaps.' It was not until a Redcap was pointed out to me on a whin-bush that I discovered that Redcaps are Goldfinches. The nomenclature of the Tits and Wrens was a puzzling problem. I eventually made out that the Common Wren is called a 'Tomtit,' a Blue Tit is a 'Billy-biter,' and a Great Tit is a 'Blackcap.' The word 'Wren' is reserved exclusively for the Golden-crested Wren. Most people are accustomed to call young Thrushes, Throstles. But here the Song-Thrush is always a 'Throstle.' A 'Thrush' is a Missel-Thrush. Yellow-Hammers are very appropriately termed 'Goldies.' Rooks are 'Crows,' and Starlings are 'Gypies' or Gyp-Starlings. In the severe weather we experienced at the beginning of 1895, a man told me he had shot two 'French Linnets.' I asked to see them, and recognised the Brambling or Mountain Finch. Shortly after I met with a large flock of these birds in Forge Valley. As these birds come to us from the north, it is very singular that they should be called 'French Linnets,' except that there is a general tendency to call anything that is foreign, French. Redpoles are called 'Chevy Linnets.' Perhaps some etymologist can explain the word.

When I first came to reside in this village, as darkness was gathering in at the close of the long May evenings, I often wondered what bird produced the loud piping notes as it flew up and down the river, which seemed to grow more and more piercing as the darkness deepened. And one morning, when I was sleepless, on opening the window about two a.m., I heard the birds already piping when the dawn had hardly begun to break. On inquiry, I was told the birds were 'Sand-snipes.' When afterwards I saw them flying up and down the river in broad daylight, I recognised them as Sandpipers.

Every spring one or two pairs of Dippers build by the water-side in Forge Valley. The people here call them 'Water Ouzels.' Plovers are called 'Teäfits.' I imagine the word alludes to the tuft on the bird's head, and is a dialectic form analogous with teäf for tough, or beöf for bough. 'Firetail' appears to be the name given to the Redstart. Herons are 'Heron-sews.' Owls are 'Jenny-Ulets.'

This is a complete list of the local bird-names I have noticed. It would be interesting if someone residing in the Western Dales of Yorkshire would furnish a corresponding list.

THE CONSTITUENTS OF THE NORTH LANCASHIRE FLORA, 1597(?)-1893.

LISTER PETTY,

Ulverston.

SEVENTEENTH PAPER.

Scirpus setaceus L. Clarke's First Record, 1634.

1882. J. of B., as *Isolepis.* Near Seathwaite Church, etc., W. F. Miller.

Scirpus lacustris L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Urswick Tarn; and repeated **1885.** Baker's Flora, 215.

Scirpus maritimus L. C.F.R., 1629.

1874. J. of B. Pool Bridge (probably the one at Rusland); and repeated **1885.** Baker's Flora, 216. Saltmarsh at Holker, Rev. A. Ley.

Scirpus rufus Schrad. C.F.R., 1777.

[**1871.** J. of B. The late Lord de Tabley (then the Hon. J. L. Warren) is quoted as saying that Lancashire seems the most southern record for this. Notes in H. C. Watson's 'Compendium.'] **1885.** Baker's Flora, 215, as *Blysmus rufus* Link. Sparingly in the Saltmarsh south of Flookborough, J. G. Baker.

Eriophorum vaginatum L. C.F.R., 1641.

[**1778.** Robson, Flora, 211. In marshy places, Lancashire.] **1864.** Linton, Lake Country, 330. 'Common,' no locality.

NOTE.—No other *located* record in my notes. Of course the species is common.

Eriophorum angustifolium Roth. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Foxfield Moss; Newfield, Seathwaite; Plumpton Saltmarsh; Roam Moss; Cartmel Fell. As *E. polystachyon* L. Ireland Moss, near Haverthwaite. **1885.** Baker's Flora, 218. Plumpton repeated.

Rynchospora alba Vahl. C.F.R., 1633.

Gramen junceum leucanthemum Ger. Em.

1670. Ray, Cat. Pl. Ang., 151. We found it . . . in all the mosses in Lancashire; and repeated **1677.** Cat., ed. ii., 147. **1690.** Syn., ed. i., 196. **1696.** Syn., ed. ii., 266. **1724.** Syn., ed. iii., 427. **1762.** Hudson, Fl. Ang., ed. i., 15, as *Schœnus albus.* **1778.** Robson, Flora, 238-9. **1805.** Turner and Dillwyn, Bot. Guide, ii., 365; Ray repeated. **1835.**

Watson, New B.G., i., 303, repeated, with 'B.G.' as authority. **1874.** J. of B., Miss E. Hodgson. Birks Bridge, Seathwaite; spongy bogs, Plumpton. **1885.** Baker's Flora, 215. Gatescarth Pass; Coniston Old Man; Blea Tarn; Little Langdale.

Schœnus nigricans L. C.F.R., 1660.

1892. J. of B., 25. Shore bank E. of Tridley Point, L.P. Regarding the Sedges, the quotations from the 'Westmorland Notebook' are hardly satisfactory, but no authorities are given for localities, when such are named. The priority, therefore, of any of these rests, I suppose, with some of the Westmorland botanists; where the original chronicle of any appeared I do not know, except those which are recorded by Miss E. Hodgson or Mr. Baker.

Carex dioica L. C.F.R., 1690.

1888. Westm. Notebook, 26. Leven and Duddon basin. Common.

Carex pulicaris L. C.F.R., 1666.

1888. Westm. Notebook, 26. Leven and Duddon basin. Common.

Carex disticha Huds. C.F.R., 1670.

1874. J of B., Miss E. Hodgson. Grassy slopes in front of Grange; and repeated **1885.** Baker's Flora, 219, as *intermedia* Good. **1888.** Westm. Notebook, 26. Kent basin; Grange.

Carex arenaria L. C.F.R., 1688.

1874. J. of B., Miss E. Hodgson. Biggar Bank, I. of Walney; and repeated **1885.** Baker's Flora, 219. Flookborough, J. G. Baker. **1888.** Westm. Notebook, 26. Leven and Duddon basin; shore of Morecambe Bay.

Carex teretiuscula Good. C.F.R., 1792.

= *C. diandra* Schr., the earlier name.

1874. J. of B., Miss E. Hodgson. Urswick Tarn; and repeated **1885.** Baker's Flora, 220; and in **1888.** Westm. Notebook, 26; rare. Leven and Duddon basin; Urswick Tarn.

Carex vulpina L. C.F.R., 1629.

1874. J. of B., Miss E. Hodgson. Near Pool Bridge; Walney Island; ditches near Humphrey Head. All repeated **1885.** Baker's Flora, 219. **1888.** Westm. Notebook, 26. Walney Island.

Carex echinata Marr. C.F.R., 1690.

1874. J. of B., Miss E. Hodgson, as *S. stellulata* Good. No locality. **1888.** Westm. Notebook, 26. Leven and Duddon basin. Common.

Carex remota L. C.F.R., 1655.

1874. J. of B., Miss E. Hodgson. Wet hedges at Stoney Crag, near Ulverston. **1888.** Westm. Notebook, 26. Leven and Duddon basin, frequent.

Carex curta Good. C.F.R., 1670.

= *C. canescens* L., the earlier name.

1888. Westm. Notebook, 26. Leven and Duddon basin, frequent.

Carex ovalis Good. C.F.R., 1690.

= *C. leporina* L., the earlier name.

1888. Westm. Notebook, 26. Leven and Duddon basin, frequent.

Carex stricta Good. C.F.R., 1792.

= *C. elata* All., the earlier name.

1846. Phytologist, 430. Grows behind the Ferry Inn (Windermere), W. Borrer; and repeated **1885.** Baker's Flora, 220. On the islands near the ferry, J. G. Baker. **1888.** Westm. Notebook, 26. Leven and Duddon basin.

Carex acuta L. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson. Urswick Tarn, and repeated **1885.** Baker's Flora, 221. **1888.** Westm. Notebook, 27. Leven and Duddon basin; Ulverston.

Carex Goodenowii J. Gay. C.F.R., 1696.

1874. J. of B., Miss E. Hodgson, as *vulgaris* Fries. No locality. **1885.** Baker's Flora, 220. Ascending from shore level at Flookborough. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

Carex glauca Scop. = ***C. flacca*** Schreb. C.F.R., 1688.

1874. J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 223. Ascending from shore level in Furness. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

[***Carex limosa*** L.

Given by Hudson, **1778**, as a Lancashire plant, this copied by others, Withering and Turner and Dillwyn amongst the rest. **1885.** Baker, Flora, 222, writes, 'I have seen no Lakeland specimens.']

Carex pilulifera L. C.F.R., 1688.

1888. Westm. Notebook, 27. Leven and Duddon basin, common.

Carex præcox Jacq. C.F.R., 1632.

1874. J. of B., Miss E. Hodgson. Dry grassy knolls, Ulverston. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

Carex pallescens L. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson. About Newfield, Seathwaite. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

Carex panicea L. C.F.R., 1696.

1874. J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 222. Ascending from Barrow Island. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

Carex sylvatica Huds. C.F.R., 1640.

1874. J. of B., Miss E. Hodgson. Old Hall Wood, near Ulverston. **1885.** Baker's Flora, 222. Ulverston; Grange-over-Sands. **1888.** Westm. Notebook, 27. Leven and Duddon basin, frequent.

Carex lævigata Sm. C.F.R., 1800.

1888. Westm. Notebook, 27. Leven and Duddon basin, rare.

Carex binervis Sm. C.F.R., 1800.

1874. J. of B., Miss E. Hodgson. North side of Hoad; Mungeon, Cartmel. **1888.** Westm. Notebook, 27. Leven and Duddon basin, frequent.

Carex distans L. C.F.R., 1688.

1885. Baker's Flora, 222. Shore-marshes, Cark; Flookborough; Humphrey Head. **1888.** Westm. Notebook, 27. Leven and Duddon Basin; shores of Morecambe Bay.

Carex fulva Good. C.F.R., 1792.

1874. J. of B., Miss E. Hodgson. Between Earnse Point and North Scale, Walney Island. **1885.** Baker's Flora, 221. From the shore level in Furness. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

Carex extensa Good. C.F.R., 1792.

1874. J. of B., Miss E. Hodgson. Foxfield Marsh; and repeated **1885.** Baker's Flora, 221. Also on the shore at Ulverston, Rev. A. Ley; about the mouth of Cark Beck, J. G. Baker. **1888.** Westm. Notebook, 27. Leven and Duddon basin; Foxfield.

Carex flava L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Walna Scar; Seathwaite, and banks of the Duddon; Isle of Walney. **1885.** Baker's

Flora, 221. Ascending from shore level at Flookborough to 600 yards on Coniston Old Man, J. G. Baker; 650 yards, H. C. Watson. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

VAR. ***Carex lepidocarpa*** Tausch.

1874. J. of B., Miss E. Hodgson. Between Earnse Point and North Scale, Isle of Walney; Gaud Mire; Dunnerdale Fells; Duddon banks, Seathwaite.

Carex hirta L. C.F.R., 1655.

1874. J. of B., Miss E. Hodgson. Rough pastures, Isle of Walney. **1885.** Westm. Notebook, 27. Leven and Duddon basin; Walney Island.

Carex paludosa Good. C.F.R., 1716.

= *C. acutiformis* Ehrh., the earlier name.

1874. J. of B., Miss E. Hodgson. Urswick Tarn; Tridley Point Saltmarsh; and repeated **1885.** Baker's Flora, 224. **1888.** Westm. Notebook, 27. Leven and Duddon basin; Urswick Tarn.

Carex rostrata Stokes. C.F.R., 1670.

1888. Westm. Notebook, 27. Leven and Duddon basin, common.

Carex vesicaria L. C.F.R., 1699.

1874. J. of B., Miss E. Hodgson. Bull Coppice Beck, Newfield, Seathwaite; and repeated **1885.** Baker's Flora, 224. **1888.** Westm. Notebook, 27. Leven and Duddon basin, common.

Phalaris arundinacea L. C.F.R., 1640.

1874. J. of B., Miss E. Hodgson. By the Leven at Low Wood; Mansriggs Wood, by the beck; Newlands Beck; Bardsea Mill Pond.

Phalaris variegata.

1885. Baker's Flora, 224. Near Hawkshead, probably a garden outcast, J. G. Baker.

Anthoxanthum odoratum L. C.F.R., 1666.

1874. J. of B., Miss E. Hodgson. No locality.

Alopecurus pratensis L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. No locality.

Phleum pratense L. C.F.R., 1633.

1874. J. of B., Miss E. Hodgson. No locality. **1885.** Baker's Flora, 225. Ascending to 300 yards over Coniston, J. G. Baker.

Agrostis canina L. C.F.R., 1672.

1874. Miss E. Hodgson. Roadsides under Flan (hill, near Ulverston). **1885.** Baker's Flora, 225. From shore level at Ulverston to 600 yards on Coniston Old Man, J. G. Baker.

Agrostis alba L. C.F.R., 1716.

1885. Baker's Flora, 226. Frequent from the Furness Saltmarshes.

Agrostis vulgaris With. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson. No locality.

VAR. ***A. pumila*** L.

1874. J. of B., Miss E. Hodgson. Green Moor House lane, Pennington, near Ulverston.

VAR. ***A. nigra*** (With.).

1885. Baker's Flora. Postcript:—Has been found by the Rev. W. W. Newbould,[1] near Grange-over-Sands.

Calamagrostis epigeios Roth. C.F.R., 1640.

1885. Baker's Flora, 226, as *Arundo* L. Damp western slope of the hill near Elliscales Hall, near Dalton, F. A. Lees.

Ammophila arundinacea Host. C.F.R., 1562.

1874. J. of B., Miss E. Hodgson. Roosebeck; West shore, Walney Island; and repeated **1885.** Baker's Flora, 226. (Not seen about Grange, J.G.B.)

Aira præcox L. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson. Everywhere on the crags, Dunnerdale Fells; and hilly districts near Ulverston.

Deschampsia cæspitosa Beauv. C.F.R., 1640.

1874. Miss E. Hodgson, as *Aira*. Walna Scar; Fell Foot, Windermere; Colton Beck Wood; Mansriggs Wood; by the canal feeder, Ulverston. **1885.** Baker's Flora, 227. From shore level at Ulverston, J.G.B.

Deschampsia flexuosa Trin. C.F.R., 1696.

1874. Miss E. Hodgson, as *Aira*. Walna Scar; Dobby Shaw; Old Hall Wood; Birkdault Quarry (Cartmel).

Holcus mollis L. C.F.R., 1688.

1885. Baker's Flora, 228. Frequent from shore level at Flookborough, J. G. Baker.

Holcus lanatus L. C.F.R., 1634.

1874. J. of B., Miss E. Hodgson. Frequent, no locality.

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[1] Rev. W. W. Newbould. See Britten and Boulger, *Index*, 126-7.

Trisetum pratense Pers. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson, as *Avena*. Hedges of cultivated fields, Ulverston.

Avena pubescens Huds. C.F.R., 1688.

1874. J. of B., Miss E. Hodgson. South end of Biggar Bank, I. of Walney; near the Park, Dalton.

Arrhenatherum avenaceum Beauv. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Hayfields at Ulverston.

Sieglingia decumbens Bernh. C.F.R., 1670.

1874. J. of B., Miss E. Hodgson, as *Triodia*. Roadside between Horrace and High Rake, near Ulverston.

Phragmites communis Trin. C.F.R., 1551.

1869. Bolton Geol. Frag., 116. Urswick Tarn; and locality repeated **1874.** J. of B., Miss E. Hodgson; and hedges between Old Holebeck and Leece; ditch-sides, near Ulverston; Humphrey Head; and the latter repeated **1885.** Baker's Flora, 226.

Sesleria cœrulea Scop. C.F.R., 1670.

1857. Phytologist, 259. Humphrey Head, Dr. Windsor; and repeated. **1861.** Phytologist, 260; and in **1885.** Baker's Flora, 227; and plentiful about Grange, J. G. Baker. **1892.** Haviland, Distrib. Disease, 381. No locality.

Cynosurus cristatus L. C.F.R., 1605.

1874. J. of B., Miss E. Hodgson. No locality.

Molinia cœrulea Mœnch. = *M. varia* Schrank. C.F.R., 1666.

1874. J. of B., Miss E. Hodgson. Angerton Moss. **1885.** Baker's Flora, 229. Frequent from shore level at Flookborough, J. G. Baker.

Melica uniflora Retz. C.F.R., 1632.

1874. J. of B., Miss E. Hodgson. Woods, frequent.

Dactylis glomerata L. C.F.R., 1640.

1874. J. of B., Miss E. Hodgson. No locality.

Briza media L. C.F.R., 1570.

1874. J. of B., Miss E. Hodgson. Craggy ground above Penny Bridge, frequent.

Poa annua L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Walna Scar.

Poa nemoralis L. C.F.R., 1762.

1885. Baker's Flora, 231. Walls between Lake Side Station and Newby Bridge, J. G. Baker.

Poa compressa L. C.F.R., 1724.

1885. Baker's Flora, 231. Walls at Grange and on the railway embankment near Cark Station, J. G. Baker.

Poa pratensis L. C.F.R., 1591.

1874. J. of B., Miss E. Hodgson. Frequent, no locality.

VAR. ***subcœrulea*** Sm.

1885. Baker's Flora, 231. On walls by the shore, Flookborough, J. G. Baker.

Poa trivialis L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Frequent, no locality.

Glyceria fluitans R. Br. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Beck in the meadow at Stoney Crag, near Ulverston. **1885.** Baker's Flora, 230. Common, from shore level in Furness, J. G. Baker.

Glyceria plicata Fr. C.F.R., 1845.

1874. J. of B., Miss E. Hodgson. Under Mary Bank, Dalton. **1885.** Baker's Flora, 230. Skelwith; Dalton-in-Furness.

Glyceria maritima Wahl. C.F.R., 1688.

1857. Phytologist, 259, as *Poa*. Below Humphrey Head, Dr. Windsor.

Festuca rigida Kunth. C.F.R., 1597.

1885. Baker's Flora, 230, as *Sclerochloa* Link. Grange-over-Sands, T. J. Foggitt.

Festuca sciuroides Roth. C.F.R., 1670.

1885. Baker's Flora, 232. Walls near the Ferry Inn, W. Foggitt; wall top at Ash Landing, J. H. Lewis. **1889,** Westm. Notebook, 133. Mud-topped wall near Lakeside Station, W. West, in Record Club Rep., **1883.**

Festuca ovina L. C.F.R., 1688.

1874. J. of B., Miss E. Hodgson. West shore, Walney Island.

Festuca duriuscula L. = ***F. fallax*** Thuill. C.F.R., 1670.

1885. Baker's Flora, 233. Up to 500 yards on Coniston Old Man, J. G. Baker.

Festuca rubra L. C.F.R., 1762.

1885. Baker's Flora, 233. Shore marshes about Flookborough and Grange, J. G. Baker.

Festuca pratensis Huds. (= ***F. elatior*** L. in pt.). C.F.R., 1670.

1874. J. of B., Miss E. Hodgson. About Flan Hill, Ulverston; Cartmel Fell.

MYCOLOGY IN ITS POPULAR ASPECT.

Rev. WILLIAM FOWLER, M.A.,

Vicar of Liversedge, Yorkshire; Chairman of the Yorkshire Mycological Committee.

When I preach at home, I choose my own text, but my text for to-day, here, has been chosen for me, and I must confess I hardly know what to make of it. The popular view of fungi, so far as I have been able to make out, is that mushrooms are good for breakfast, and that all, or nearly all, other fungi are so poisonous that they ought not to be even allowed to live. In Lincolnshire the farm labourers, if they meet with a tuft of the Inky Coprinus (*Coprinus atramentarius*), kick it up, lest their children should be poisoned by it, though it is, as many here know, not only quite harmless, but one of the most savoury species we have. The Shaggy Coprinus (*Coprinus comatus*) and the Parasol Mushroom (*Lepiota procerus*), both of them excellent, meet with a similar fate. If on an excursion I taste a small portion of a toadstool (for, popularly, all are toadstools which are not mushrooms), those who are not mycologists look as if they thought I was running a great risk of being poisoned, and are surprised, perhaps, to see me alive and well on the next excursion. Once when I had in a basket the Red Amanita (*Amanita rubescens*) and the delicious Lactarius (*Lactarius deliciosus*), I met a man who knew me, and who said, 'You're never going to eat *them*?' 'Oh, yes,' said I, 'they will make a capital supper.' 'Well,' replied he, 'before I had any, I should want to see you try first, and then I should want to wait a bit.' This is 'Mycology in its Popular Aspect,' at any rate, in *one* sense.

But I think the framer of my text had nothing of this kind in his mind. He wished me, probably, to induce others to take up the study of fungi, by showing that it is neither as uninteresting nor as difficult as it is often supposed to be, and thus making it more popular. No object in nature is uninteresting to those who inquire into it and learn all that can be known about it, and fungi have many *special* points of interest. The quickness of their growth; their curious forms; their strange properties (some of them being not only edible but nourishing, while others are very poisonous); their being unlike most other plants in this, that they are either parasites or saprophytes (stealing their nourishment from other vegetables or animals, living or dead); their immense number (above 30,000); all these peculiarities

have made the study of them full of interest to those who have indulged in it. And yet the botanists who study fungi are very few. How is it? Chiefly, I think, because the determination of them seems much more difficult than it really is. There *are* difficulties, no doubt (especially when species approach one another very closely), but this is true also of insects, and of flowering plants, such as Brambles, Hawkweeds, and Willows. But by the exercise of careful observation, patience, and perseverance, most of these difficulties can be overcome, whether the species are so minute that the compound microscope is necessary for their determination, or so large that you see them as you pass through the wood or the meadow. To the popular eye, many of these larger fungi appear very much alike; but there are differences in reality which may quite easily be seen by those who will take the trouble to examine them. People sometimes ask 'How are we to distinguish between edible and poisonous fungi?' Well, the only *safe* way to do so is to learn the characteristic features of each species, as you learn those of flowering plants. Some poisonous fungi bear a certain resemblance to the common mushroom, but there are also points of difference between them, just as there are between the poisonous plant called 'Fools' Parsley' and common parsley. If you know edible species when you see them (such as the Blewit, the Chantarelle, the Truffle, the Morel) as you know cabbages, peas, and beans, you, of course, run no risk in eating them; and if you know poisonous species (such as the Fly Agaric, the Liberty Cap, the Wood Woolly Foot) as you know Monkshood and Deadly Nightshade, you, of course, take care to avoid them. In a word, it is not by *any one* character, but by a *combination* of characters, that you should be guided, if you would proceed safely. If this plan involve more trouble than you care to take, my advice to you is—let them alone altogether, so far as eating them is concerned. Some have, through carelessness, neglected to take it, and have found out what mycology is in its *un*popular aspect.

Others again, whose ideas reach beyond the gratification of their palate, ask, when we meet with a fungus in our rambles, how are we to make out what it is? Well, supposing you have a Handbook of British Fungi, you do much the same as in the case of flowering plants. Before using your book, you carefully examine the fungus, making sections of it if necessary, and then decide to which class, order, and genus it belongs, and what species of the genus it is, by the help of your book. You will find that after a little time you will be able to dispense with much of this book-work. Just as you say at a glance, this

plant is a Geranium, and that a Veronica, so you will soon be able to say, this fungus is a Mycæna, and that a Panæolus. Then, turning to the genus, you will see to which division it belongs, and then with what species of that division it most nearly agrees. There is far greater pleasure in finding out for yourself what any species is, than in being told what it is by someone else; beside, you learn in the search far more about it and other species similar to it. There are difficulties, of course, as there are in every other natural history subject (for some species are much more nearly connected than others), but careful observation, patience, and perseverance will overcome most of them, and every difficulty overcome is a source of pleasure.

I have tried to show that in the study of 'these wretched things' (as I have heard them called), there is much interest, and less difficulty than is supposed, and if I have in any measure succeeded, I shall be well satisfied. Especially pleased I shall be if, in consequence of what has been said, some of the *younger* members of our Union should take up the study, and find in it the interest and pleasure I have myself found. The pleasure does not consist in merely *finding out the names* of fungi, but in considering their habitats, their structure, their growth, their distribution, their variations, their uses, or, it may be, the diseases caused by them. Still, if we read that *Polyporus betulinus*, for instance, makes good razor-strops, or that *Puccinia malvacearum* destroys hollyhocks, our interest is greatly increased if we know these species when we see them, and perceive the reasons *why* they are thus useful or destructive. Mycology in its popular aspect is not devoid of interest and pleasure, but that interest and pleasure are greatly enhanced, when we proceed to take a survey of it in its scientific aspect, and familiarise ourselves with those minute points of agreement or difference, which have such a charm for those who delight, not only in the wonders and beauties, but also in the variety of nature. Immense as is the number of fungi already recorded, others are constantly being discovered; and, with a larger band of enthusiastic workers, not only would many additional species be added to the list, but more would be learned with regard to their structure, and life history and classification. As you will see from the drawings and specimens of microscopic fungi on the table, there is a multitude of species which do not catch the popular eye, but which are found by those who know where to look for them, and which reveal the wisdom of Him, who, as has been well said, is 'maximus in minimis.'

October 1898.

NOTE—FLOWERING PLANTS.

Plants Observed near Windermere.—*Lobelia dortmanna* and *Vaccinium oxycoccos* in bogs on height east of Windermere, a little south of Storrs. Cranberry is very rare in the Lakes, and I never saw Lobelia before in a high mountain tarn.—W. Tuckwell, Waltham, Grimsby, 3rd September 1898.

NOTE—CONCHOLOGY.

***Testacella haliotidea* at Gainsborough.**—On the 22nd April last, I found a specimen of this slug, crawling over a gravel path in my garden after a heavy shower of rain, and forwarded it to Mr. W. Denison Roebuck, F.L.S., Secretary of the Conchological Section of the Lincolnshire Naturalists' Union, who submitted it to Mr. J. W. Taylor, F.L.S., for verification.

It is a new record for Lincolnshire, but I have met with it, occasionally, in my garden and elsewhere in Gainsborough for years past, and I have a fine series of the shells it bears on its tail in my collection. It is a night feeder, burying itself deep in the soil during the day, when heavy rains alone bring it to the surface. It is also a very useful slug to have in a garden, as it feeds on other living slugs and never on dead matter.—F. M. Burton, Highfield, Gainsborough, 10th May 1898.

NOTE—MAMMALIA.

Squirrels killing young Birds.—I see on p. 238 of 'The Naturalist,' Mr. Cordeaux mentions my name in connection with the above, and states that 'he does not think Squirrels can be charged with destroying young birds.' I can assure him that there is no doubt whatever as to their doing so, for not only have I several times had the fact recorded to me, by those whose testimony is beyond dispute, but also I have twice caught a Squirrel (*Sciurus vulgaris*) 'in flagrante delicto.' Once when I was lying up in cover watching a Woodpecker at work on its nesting-hole, and secondly, when I was sitting up in a tree waiting patiently for some Badgers to come out of their earth, in the twilight. In the one case the victim was a young Thrush, and in the other case a Chaffinch. I know of one wood where nearly all the Squirrels were killed under the belief that they played the mischief with the young birds, but this, in my opinion, was a great mistake, as I am borne out in my idea by several excellent naturalists, that it is, as a rule, only one pair of squirrels out of a community that take to these evil courses. They, I admit, want shooting at once, but it is a great pity to make the many suffer for the sins of the few.—Oxley Grabham, M.A., M.B.O.U., Heworth, York, 6th August 1898.

BOOK NOTICES.

We have received from Mr. **Thomas Fairley**, F.R.S.E., Vice-President of the Institute of Chemistry, and Leeds City Analyst, a reprint of an excellent paper **'On the Water Supplies of Yorkshire,'** which was published last May in the Journal of the Federated Institutes of Brewing. It is illustrated by a two-page geological map of the county after Mr. Charles Bird. Various tabulations of the chemical constituents of various waters are given, and their suitability for various purposes discussed.

From the energetic Secretary of the Darlington and Teesdale Naturalists Club, Mr. **George Best,** we have received a little pamphlet entitled **'Walks | Around | Darlington | and Neighbourhood,** | including Weardale, Teesdale, Swaledale, | and Wensleydale,' etc. It gives succinct and tersely-worded directions for 26 different walks. The little pamphlet, which extends to 12 pages in all, is not dated, and—if a reprint—bears no trace of its origin.

THE CONSTITUENTS OF THE NORTH LANCASHIRE FLORA, 1597(?)-1893.

LISTER PETTY,

Ulverston.

EIGHTEENTH PAPER.

Bromus giganteus L. Clarke's First Record, 1688.

1874. Miss E. Hodgson, as *Festuca*. Under Humphrey Head; in wood at Colton Beck Bridge.

Bromus asper Murr. C.F.R., 1634.

=*B. ramosus* Huds., the earlier name.

1882. J. of B., 347. Grange, W. F. Miller.

Bromus erectus Huds. C.F.R., 1690.

1885. Baker's Flora, 234. Believed to have been gathered near Furness Abbey, Charles Bailey.

Bromus sterilis L. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson. Rake Lane, near Ulverston.

Bromus mollis L. C.F.R., 1641.

1874. J. of B., Miss E. Hodgson. Shores and hilly grounds.

Brachypodium sylvaticum R.&S. C.F.R., 1629.

1874. J. of B., Miss E. Hodgson. Near Penny Bridge; under Humphrey Head.

Lolium perenne L. C.F.R., 1548.

1874. J. of B., Miss E. Hodgson. No locality.

Lolium italicum Braun.

1874. Miss E. Hodgson. Old Hall Wood, Ulverston.

Agropyron repens Beauv. C.F.R., 1597.

1874. J. of B., Miss E. Hodgson, as *Triticum*. Colton Beck Wood; beach at Bardsea (possibly this latter is *A. littorale* which I have seen there).

VAR. ***Agropyron littorale*** Reichb.

1885. Baker's Flora, 235. Walney Island, Rev. A. Ley; and in the salt marshes at Cark and below Humphrey Head, J. G. Baker. **1892.** Naturalist, 81. Marsh Grange, Marsh; shore, Rampside; shore, Bardsea, L. P.

Agropyron acutum R.&S. C.F.R., 1856.

1885. Baker's Flora, 235, as *Triticum* D.C. Sparingly on the railway embankment west of Cark Station, J. G. Baker.

Agropyron junceum Beauv. = *Triticum* L. C.F.R., 1633.

1874. J. of B., Miss E. Hodgson. Roosebeck shore, and repeated **1885.** Baker's Flora, 235.

Lepturus filiformis Trin. C.F.R., 1632.

1885. Baker's Flora, 236. Grange-over-Sands, W. Foggitt.

Nardus stricta L. C.F.R., 1632.

1874. J. of B., Miss E. Hodgson. Frequent on walls and on the fells.

Hordeum sylvaticum Huds. C.F.R., 1666.

1885. Baker's Flora, 236. Limestone wood behind Grayrigg Villas, Grange, J. G. Baker. **1892.** Haviland, Distrib. Disease, 382. No locality.

Hordeum murinum L. C.F.R., 1548.

1892. Naturalist, 81. Shore bank, Rampside, 1888, L. P.

Mr. W. A. Clarke's 'First Records' terminate here.

FERNS.

As the 'London Catalogue' (Eds. 8 and 9) admits only a few varieties, I have merged the records for the varieties in the type, as, of course, the latter must occur for the varieties to be present. On the strong wish of a friend (much against my own opinion), the records in Watson's *Topographical Botany*, ed. ii., 1883, have been included so far as other evidence shows that they refer to North Lancashire; but Watson is troublesome to follow, and I cannot say that in all cases my identification of the locality for his record is the true one. The second edition of Linton's Ferns, by J. M. Barnes, is quoted, the first edition, 1865, not quoted, because they are in his 'Lake Country,' 1864.

Hymenophyllum tunbridgense Smith.

1843. Phytologist, 479. Coniston, S. Simpson; and repeated **1854.** Newman, Brit. Ferns, 297. **1855.** Moore and Bradbury, Nat.-Printed Ferns, fol. ed., plate 49, text. Lake District; and repeated **1859.** Moore and Bradbury, 8vo. ed., ii., 305. **1864.** Linton,[1] Lake Country, 332. Coniston, very rare. **1878.** Linton's Ferns, ed. ii., 155. Coniston. **1886.** Eng. Bot., ed. iii., vol. 12, 356. Lake District.

[1] Linton, W. J., b. Dec. 7th, 1812, London; d. Dec. 1897, in America. Besides 'The Lake Country' he illustrated many things, and wrote on more. The greatest wood engraver of his time. Chartist, artist, poet, Socialist. Autobiography, 'Memories,' 1895, with portrait.

Hymenophyllum unilaterale Bory.

1841. Phytologist, 90, as *H. Wilsoni* Hoste. Coniston Old Man, Miss M. Beever; and repeated **1843.** 479. Miss Beever and Rev. G. Pinder. **1854.** Newman, Brit. Ferns, 301. **1859.** Moore and Bradbury, Nat.-Print. Ferns, 8vo. ed., ii., 311. Near Hawkshead, Miss S. Cowburn; Miss Beever repeated. **1864.** Linton, Lake Country, 332. Not uncommon (i.e., in *his* Lakeland area). **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton, Ferns, ed. ii., 158. Miss Beever repeated; and also in **1885.** Baker's Flora, 243. Seathwaite (no finder).

Pteris aquilina L.

1843. Phytologist, 476. Common near Coniston, Miss M. Beever. **1864.** Linton, Lake Country, 332. Everywhere. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton's Ferns, ed. ii., 144. As before.

Cryptogramme crispa R.Br.

1796. Withering, ed. iii., 764, as *Pteris*. In Rusland, Jackson. **1843.** Phytologist, 476. Coniston Old Man, G. Pinder; common near Coniston, Miss M. Beever. **1843.** Jopling, Furness and Cartmel, 272, as *Stegania onocleoides*. In the neighbourhood of Holker and Broughton-in-Cartmel or Field Broughton, W. Wilson. **1854.** Newman, Brit. Ferns, 37. Very abundant in Lancashire; Miss Beever repeated, and in **1859.** Moore and Bradbury, Nat.-Print. Ferns, 8vo. ed., ii., 103. **1864.** Linton, Lake Country, 331. On all the higher elevations. **1869.** Aspland's Guide, 106. Scattered round the hills from Lindale (-in-Cartmel) to Newby Bridge, A. Mason. **1874.** J. of B., Miss E. Hodgson. Sparingly on the slate hills about Ulverston. **1878.** Linton, Ferns, ed. ii. Coniston.

A crested variety found by Mr. W. Nixon at Seathwaite. [**1840.** Newman, Brit. Ferns, 17. Lancashire.]

Lomaria Spicant Desv.

1843. Phytologist, 479, as *Blechnum*. Near Coniston, Miss M. Beever; and repeated **1859.** Moore and Bradbury, Nat.-Print. Ferns, ii., 215. A var., Furness Fells, Isaac Huddart. **1864.** Linton, Lake Country, 302. Common, no locality. **1865.** Lowe, Native Ferns, ii., 385. Huddart repeated. **1869.** Aspland's Guide. Grange; Holker, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton's Ferns, ed. ii., 136. Coniston. Vars., Blawith Moor, Mrs. Wilson; Torver, J. K. Hodgson; Lake Bank, Kirkby Moor, and Bowstead Gates, near Ulverston, Mrs. Hodgson.

Asplenium Adiantum nigrum L.

1843. Phytologist, 478. Very local near Coniston, and in small quantities, Miss M. Beever. **1857.** Phytologist, 257. On the wall of the lane between Flookborough and Humphrey Head, Dr. Windsor. **1859.** Moore and Bradbury, Nat.-Print. Ferns, ii., 80, N. Lancashire. **1861.** Phytologist, 260. East side of Humphrey Head, C. J. Ashfield. **1864.** Linton, Lake Country, 332. Very common on old walls. **1869.** Aspland's Guide. Type and vars. From shore level to top of Humphrey Head, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton, Ferns, ed. ii., 99. Common throughout the Lake Country.

Asplenium marinum L.

1859. Moore and Bradbury, Nat.-Print. Ferns, ii., 94. North Lancashire; Head of Morecambe Bay. **1869.** Aspland's Guide, 106. Almost extinct. . . . Small plants may occasionally be found, A. Mason. **1874.** J. of B., Miss E. Hodgson. Ruins of Peel Castle, Peel Island; and repeated **1885,** Baker's Flora, 242.

Note.—If Mason's locality was on Kirkhead, a locality mentioned to me by Mr. Podmore, of Charney Hall, it seems quite gone now. Both Mr. Podmore and I -separately- have sought for it.

Asplenium viride Huds.

1874. J. of B., Miss E. Hodgson. Goathwaite Slate Quarries and crags above, Mrs. Woodburn. **1885.** Baker's Flora, 241. Coniston Old Man (J.G.B.?).

Asplenium Trichomanes L.

1843. Phytologist, 479. Common near Coniston, Miss M. Beever. **1857.** Phytologist, 258. On wall of lane, Flookborough to Humphrey Head, Dr. Windsor. **1861.** Phytologist, 261. Between Humphrey Head and Cartmel, C. J. Ashfield. **1864.** Linton, Lake Country, 332. Common, no locality. **1869.** Aspland's Guide, 106 (type and vars.). Everywhere, A. Mason. **1874.** J. of B., Miss E. Hodgson. Frequent on rocks and old walls. **1878.** Linton, Ferns, ed. ii., 106. Vars., Lindale, A. Mason. Haverthwaite, G. Baini. Ulverston and Bardsea, Mrs. J. K. Hodgson. **1885.** Baker's Flora, 242. Mason repeated.

Asplenium Ruta-muraria L.

1843. Phytologist, 478. On the Shepherds' Bridge in Yewdale, Miss M. Beever. **1861.** Phytologist, 260. Between

Humphrey Head and Cartmel, C. J. Ashfield. **1864.** Linton, Lake Country, 332. Common, no locality. **1869.** Aspland's Guide (and vars.) Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Old walls, not common; limestone rocks, frequent. **1878.** Linton, Ferns, ed. ii., 112. Common. **1885.** Baker's Flora, 242. From shore level at Humphrey Head (J.G.B.?).

Athyrium Filix-fœmina Roth.

1843. Phytologist, 478. Near Coniston, Miss M. Beever; and repeated **1855.** Moore and Bradbury, text to plates, 30-34. **1859.** Moore and Bradbury, Nat.-Print. Ferns, ii., 18. **1864.** Linton, Lake Country, 332. **1865.** Lowe, Native Ferns, ii., 139. **1869.** Aspland's Guide, 106-7. Type and vars. Within six miles of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton, Ferns, ed. ii., 92. Vars. Flan, near Ulverston, Mrs. Hodgson; Gillbanks, near Ulverston, J. K. Hodgson; Furness Fell, J. Garnett; Nibthwaite, J. M. Barnes; Dunnerdale, Seathwaite, Torver, Skelwith, Crake Valley, all Mrs. Hodgson; Newby Bridge, G. B. Wollaston. **1885.** Baker's Flora, 240. From shore level to 500 yards on Coniston Old Man, J. G. Baker; 590 yards, H. C. Watson.

Ceterach officinarum Willd.

1855. Moore and Bradbury, folio ed., plate 43. A form from North Lancashire, Miss Beever. **1857.** Phytologist, 257. On a wall, lane side between Flookborough and Humphrey Head, but met with more abundantly on a wall at the village of Cark, Dr. Windsor. **1869.** Aspland's Guide, 107. From Humphrey Head, A. Mason. **1874.** J. of B., Miss E. Hodgson. Old walls at Newlands, near Ulverston (Introduced?). **1885.** Baker's Flora, 237. Dr. Windsor, confirmed by Chas. Bailey. Miss Hodgson repeated; Brathay and Pull Bay, Windermere, J. Coward; on a barn at Low Bank-ground, Coniston, Miss Beever.

Note.—Almost or quite exterminated at Newlands now—stolen by collectors.

Scolopendrium vulgare Symonds.

1843. Phytologist, 479. Occasionally found near Coniston in 1841. On wall of a water-course near Tent Lodge, Miss M. Beever. **1855.** Moore and Bradbury, Nat.-Print. Ferns, folio ed. (text to pl. 42). A var., North Lancs., G. B. Wollaston. **1859.** Moore and Bradbury, 8vo. ed., ii., 175. Ulverston,

Hadwin. **1861.** Phytologist, 260. Between Humphrey Head and Cartmel, C. J. Ashfield. **1864.** Linton, Lake Country, 332. No locality. **1865.** Lowe, Native Ferns, ii., 267. Ulverston, Mr. Hadwin. **1865.** Naturalist, 231. Furness Abbey, J. C. Melvill. **1869.** Aspland's Guide (vars. included). Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Very frequent; no locality. **1878.** Linton, Ferns, ed. ii., 126. Vars. Ulverston, Urswick, Scales, Birkrigg, Gleeston, near Dalton, Furness Abbey, Mrs. Hodgson; Cark, Crossfield; near Kellet, W. Bolton; Baycliffe Lane, near Ulverston, Hadwin and J. K. Hodgson; Flookborough, J. Stewardson.

VAR. ***multifida*** Ger. em.

1688. Ray, Fascic., 24. On rocks about Cartmel Medicinal Well, Lawson; and repeated **1718.** Derham, Phil. Let., 220. **1848.** Ray Corresp.; Ray Soc. **1889.** Westm. Note-book, 180.

Cystopteris fragilis Bernh.

1840. Newman, Brit. Ferns, 31. Lancashire. **1843.** Phytologist, 477. Rare near Coniston; occasionally on the Old Man and adjoining fells; Tilberthwaite, Miss M. Beever. **1857.** Phytologist, 257 et seq. Wall of lane between Flookborough and Humphrey Head, Dr. Windsor. **1869.** Aspland's Guide, 107. Plentiful (with vars.) on the limestone ranges. **1874.** J. of B., Miss E. Hodgson. No locality.

[***Cystopteris alpina*** Desv.

1864. Linton, Lake Country, 332, as *C. alpina* Presl. 'Back of the Old Man, Coniston (?).'] The only record.

Polystichum lobatum Presl.

1843. Phytologist, 477. Margin of Black Beck (Torver) and above Brantwood, Miss M. Beever. **1860.** Phytologist, 258. Humphrey Head, Dr. Windsor; and repeated same journal **1861,** 259. **1874.** J. of B., Miss E. Hodgson, as *P. aculeatum* Roth. No locality. [**1864.** Linton, Lake Country, 331. No locality.]

Polystichum angulare Presl.

1843. Phytologist, 477. Rare near Coniston, Miss M. Beever. **1869.** Aspland's Guide, 108. Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Sparingly near Ulverston; attaining great luxuriance in ghylls and lanes further south, especially near Gleeston, Mr. and Mrs. Hodgson. **1878.** Linton, Ferns, ed. ii., 51 (as vars.). Furness Fells, Mr. and Mrs. Hartley; near Ulverston, Leece and Dendron, Mrs. Hodgson;

Humphrey Head, A. Mason; Gleeston Lane, J. K. Hodgson; Dale Park, T. Airey; Cartmel, T. Airey. **1885.** Baker's Flora, 239. Miss Beever and Mr. and Mrs. Hodgson repeated.

Lastræa Thelypteris Presl.

[**1869.** Bolton Geol. Frag., 16. Grows in two or three places.] **1874.** J. of B., Miss E. Hodgson. Roudsey Wood. **1878.** Linton, Ferns, ed. ii., 53. Only one station known. Discovered by the Misses E. and A. Hodgson and A. Parker at Roudsey Wood, in **1853.** **1883.** Watson, Top. Bot., ed. ii., 515, col. 1. 'V.C. 69, Westm., Miss Hodgson MS.' **1885.** Baker's Flora, 239. Miss Hodgson repeated. Peat mosses between Lake Side and Greenodd, J. Coward.

Lastræa Oreopteris Presl.

1843. Phytologist, 478. Very abundant near mountain streams in neighbourhood of Coniston, Miss M. Beever; and repeated **1859.** Moore and Bradbury, Nat.-Print. Ferns, i., 176, as *L. montana*. **1864.** Linton, Lake Country, 331. Common, no locality. **1865.** Lowe, Native Ferns, i., 220. Coniston, E. J. Lowe. **1869.** Aspland's Guide, 107-8. Thickly distributed over the district of Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton, Ferns, ed. ii., 59 (and vars.). Furness Fell, J. Wilson; Seathwaite, J. K. Hodgson.

Lastræa Filix-mas Presl.

1843. Phytologist, 478. Common near Coniston, Miss M. Beever. **1864.** Linton, Lake Country, 331 (under a var.). Coniston. **1865.** Lowe, Native Ferns, i., 241 (as a var.). Near Elterwater, Rev. Geo. Pinder, and on p. 251, a variety is named by Mr. E. J. Lowe *Beevorie*,[1] with the name misspelled. **1869.** Aspland's Guide, 107. Abundant everywhere. **1874.** J. of B., Miss E. Hodgson. Type frequent everywhere; no locality. **1878.** Linton, Ferns, ed. ii., 64. Vars., Coniston, J. K. Hodgson; Seathwaite, Mrs. J. K. Hodgson; Elterwater, Rev. Geo. Pinder; near Ulverston, J. M. Barnes.

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[1] Miss Mary Beever, b. Ardwick, Manchester (circ.) 1800, d. Coniston, Lancs., 31st Dec. 1883. Contributed to Baxter's 'Phænog. Bot.,' 1836; Newman's 'Ferns' (when appearing in 'Phytologist,' 1841-54); Bradbury's 'Nature Printed Ferns,' 1855 (fol. ed.), and 1859-60 (8vo. ed. in 2 vols.); Lowe's 'Native Ferns,' vol. i., 1865; Baker's 'Flora,' 1885. Some of her letters in Ruskin's '*Hortus inclusus*,' 1887. I am indebted to Mr. W. G. Collingwood for the dates of birth and death.

Lastræa rigida Presl.

[**1861.** Hooker, Ferns of Gt. Brit., 16, as *Nephrodium* Desv. Said to be confined to the limestone district of Lancashire, Westmorland, and Yorkshire.] **1869.** Aspland's Guide, 108. Plentiful at Grange, A. Mason; and repeated **1885.** Baker's Flora, 240. **1885.** J. of B., 331. Hampsfield, E. T. Bennett. **1892.** Haviland, Distrib. Disease, 382. No locality.

Lastræa spinulosa Presl.

1864. Linton, Lake Country, 332. Coniston. **1865.** Naturalist, 230. Wood on left-hand side of path from Brathay Bridge to Skelwith and Colwith, J. C. Melvill. **1869.** Aspland's Guide, 107. Generally distributed. **1874.** J. of B., Miss E. Hodgson. Roudsey Wood. **1878.** Linton, Ferns, ed. ii., 78. Common in bogs. **1885.** Baker's Flora, 240. Linton and Miss Hodgson repeated.

Lastræa dilatata Presl.

1843. Phytologist, 478. Coniston, Miss M. Beever; abundant at Coniston, J. B. Wood. **1859.** Moore and Bradbury, Nat.-Print. Ferns, i., 230. Coniston Old Man, Torver, Elterwater. **1864.** Linton, Lake Country, 332. Miss Hodgson repeated; Tilberthwaite. **1869.** Aspland's Guide. Holker, A. Mason. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton, Ferns, ed. ii., 82. Common everywhere throughout the Lake District. Vars., Lindale, Crossfield; Grange, A. Mason; Broughton, J. M. Barnes. **1885.** Baker's Flora, 240. From shore level to 600 yards on Coniston Old Man.

Lastræa dumetorum Moore.

1855. Moore and Bradbury, Nat.-Print. Ferns, fol. ed., text to plate 25. Tilberthwaite, near Coniston, Miss M. Beever. **1864.** Linton, Lake Country, 332. Throughout the rocky fells. **1865.** Lowe, Native Ferns, i., 265. Elterwater, Rev. Geo. Pinder; and Miss Beever repeated, 289. **1869.** Aspland's Guide, 107. Holker, A. Mason. **1878.** Linton, Ferns, ed. ii., 82. Miss Beever and Pinder repeated; and both repeated **1885.** Baker's Flora, 240.

Lastræa collina Bab.

1854. Newman, Brit. Ferns, 144, as *Lophodium*. Lake Lancashire, Miss Beever. **1855.** Moore and Bradbury, folio ed., text to plate 26b. Torver, T. Eccleston. plate 26a. Elterwater, Rev. Geo. Pinder; and repeated **1864.** Linton, Lake Country, 332; and **1865.** Lowe, Native Ferns, i., 303. **1878.**

Linton, Ferns, ed. ii. **1885.** Baker's Flora, 241. Pinder repeated. Coniston (possibly this is Miss Beever's locality; Eccleston's has been accredited to her by some compilers). **1886.** Eng. Bot., ed. iii., vol. 12, 85. Lancashire, Newman.

Lastræa æmula Brach.

1855. Moore and Bradbury, Nat.-Print. Ferns, fol. ed., plate 27. North Lancashire, as *L. fœnisecii.* **1859.** Moore and Bradbury, 8vo. ed., i., 252. Coniston; and repeated **1864.** Linton, Lake Country, 332. **1874.** J. of B., Miss E. Hodgson. In some of the Kirkby Moor ghylls which decline into the Duddon (estuary), Messrs. B. Waites and J. K. Hodgson. **1878.** Linton, Ferns, ed. ii., 87. Broughton (in Furness?), J. M. Barnes; Furness Fell, T. Hartley; Miss Beever, Waites and Hodgson repeated; and in **1885.** Baker's Flora, 241. Dale Park, south of Esthwaite Water, J. Coward. **1886.** Eng. Bot., ed. iii., vol. 12, 89. North Lancashire.

Polypodium vulgare L.

1843. Phytologist, 476. Common near Coniston, Miss M. Beever. **1859.** Moore and Bradbury, Nat.-Print. Ferns, 8vo. ed., i. 68 (a var.). Ulverston, Miss E. Hodgson. **1861.** Phytologist, 260. Between Humphrey Head and Cartmel. **1864.** Linton, Lake Country, 331. Common, no locality. **1865.** Lowe, Native Ferns, i., 28 (vars.). Cark, Messrs. Stansfield; Miss Hodgson repeated. **1869.** Aspland's Guide, 108. Plentiful everywhere. **1874.** J. of B., Miss E. Hodgson. No locality. **1878.** Linton, Ferns, ed. ii., 23 (various vars.). Stainton, Slack Head, and Cartmel Fell, J. M. Barnes; Crake Valley, J. K. Hodgson; Furness Fell, J. A. Wilson; near Grange, finders unknown.

Phegopteris Dryopteris Fée.

[**1762.** Hudson, Fl. Ang., 391, as *Polypodium* L. In aridis saxosis in comit. Lancast.; and repeated **1775.** Jenkinson, Brit. Pl., 244. **1778.** Hudson, ed. ii., 460. **1787.** Withering, ed. ii., vol. 3, 63, and in all subsequent editions. **1805.** Turner and Dillwyn, Bot. Guide, ii., 372. **1840.** Newman's Brit. Ferns, 26. Lancashire, sparingly.] **1843.** Phytologist, 477. Common near Coniston, Miss M. Beever; and repeated **1859.** Moore and Bradbury, Nat.-Print. Ferns, 8vo. ed., i., 89. **1861** (dated **1855**). Martineau's Guide, 188. Is very abundant in the woods of the Furness Fells (F. Clowes). **1864.** Linton, Lake Country, 331. Furness Fells; and Miss Beever repeated. **1865.** Naturalist, 229. Duddon Valley, J. C. Melvill. **1869.**

Aspland's Guide, 108. Thinly scattered over the district, nowhere plentiful, A. Mason. **1874.** J. of B., Miss E. Hodgson. Lawyer's Wood and hedges near Ulverston. **1878.** Linton's Ferns, ed. ii., 31; as in 1864. **1885.** Baker's Flora, 238. Ascending from shore level at Ulverston. **1885.** J. of B., 331. Remarkably fine in woods near Skelwith, A. W. Bennett. **1886.** Eng. Bot., ed. iii., vol. 12, 47. Lancashire. **1892.** Haviland, Distrib. Disease, 382. No locality.

Phegopteris Robertiana R.Br.

1869. Aspland's Guide, 108. Grange, A. Mason. **1874.** J. of B., Miss E. Hodgson. Hampsfell, Mr. Douthwaite; and repeated **1885.** Baker's Flora, 238.

Phegopteris polypodioides Fée.

1843. Phytologist, 477, as *Polypodium pheg.* Coniston Old Man, Rev. Geo. Pinder. Common near Coniston, Miss M. Beever; and repeated **1859.** Moore and Bradbury, 8vo. ed., i., 73. **1864.** Linton, Lake Country, 331. **1865.** Naturalist, 228. By Colwith Waterfall, J. C. Melvill. **1869.** Aspland's Guide, 108. Holker. Newby Bridge, A. Mason. **1874.** J. of B., Miss E. Hodgson. Roudsey Wood, and occasionally in the hedges and ghylls. **1878.** Linton, Ferns, ed. ii., 27. Coniston, and generally distributed through the district. **1883.** Watson, Top. Bot., ed. ii., 509, col. 1. 'V.C. 69, Miss Beever, sp.' **1885.** Baker's Flora, 237-8. Frequent throughout the district from near shore level in Roudsey Wood . . . to 500 yards on Coniston Old Man, J. G. Baker.

Osmunda regalis L.

1843. Phytologist, 479. Near Coniston, in boggy situations, Miss M. Beever. **1843.** Jopling, Furness and Cartmel, 272. Kirkby Moor, Aiton. Ellerside mosses, Cartmel, Wilson. **1844.** Otley, Guide, ed. vii., 153. Skelwith; and repeated **1849,** ed. viii., 142. **1859.** Moore and Bradbury, Nat.-Print. Ferns, 8vo. ed., ii., 318. Colwith, Mr. Fordham. **1864.** Linton, Lake Country, 331. Otley and Fordham repeated; Coniston Crags. **1865.** Naturalist, 232. Repeated Fordham; J. C. Melvill. **1869.** Bolton Geol. Frag., 16. Roudsey Moss; p. 67, Angerton Moss. **1869.** Aspland's Guide, 108. Holker, A. Mason. **1874.** J. of B., Miss E. Hodgson, Ulverston; Plumpton, low hedges; Roudsey. **1878.** Linton, Ferns, ed. ii., 163. Brantwood, by Coniston; Yewdale, under Coniston Crags. **1885.** Baker's Flora, 244; repeated. Coniston; Ulverston; Grange.

Ophioglossum vulgatum L.

1869. Aspland's Guide, 108. Castlehead Marsh, A. Mason. **1874.** J. of B., Miss E. Hodgson. Swarthmoor.

Botrychium Lunaria Sw.

1843. Jopling, Furness and Cartmel. Kirkby Moor, Aiton. Cartmel Parks, Wilson. **1864.** Linton, Lake Country, 333. Coniston Fells. **1869.** Aspland's Guide, 108. Abundant on all upland pastures, A. Mason. **1874.** J. of B., Miss E. Hodgson. Roudsey Wood; Old Hall Fields. **1878.** Linton, Ferns, ed. ii. Furness Fells, above Coniston Water.

Equisetum maximum L.

1864. Linton, Lake Country, 333, as *E. telmateia* Ehrh. All the lakes.

Equisetum arvense L.

1843. Phytologist, 479. 'Near Coniston, introduced?' Miss M. Beever. **1874.** J. of B., Miss E. Hodgson. No locality.

Equisetum sylvaticum L.

1843. Phytologist, 479. The Copper Mine near Coniston, Miss M. Beever. **1885.** Baker's Flora, 246-7. Ascends to Copper Mine on Coniston Old Man, Miss Beever.

Equisetum palustre L.

1843. Phytologist, 479. Near Coniston, Miss M. Beever. **1874.** J. of B., Miss E. Hodgson. Wet meadows, Plumpton; by the railway bridge, Tridley Marsh.

Equisetum limosum Sm.

1864. Linton, Lake Country, 333. Common, no locality. **1874.** J. of B., Miss E. Hodgson. Seathwaite Tarn, Mrs. Hodgson, Urswick Tarn.

VAR. ***fluviatile*** L.

Urswick Tarn Beck. **1885.** Baker's Flora, 247. Ascends to Seathwaite Tarn, 400 yards, Mrs. Hodgson.

Equisetum hyemale L.

[Though not quoted, I am aware of the old records mentioned in Smith, Eng. Fl., ed. ii., vol. 4, 327, and have seen the books. 'Lancashire' only.] **1874.** J. of B., Miss E. Hodgson. Near Penny Bridge, Mr. G. Baini; and this repeated **1885.** Baker's Flora, 247.

Equisetum variegatum Schleich.

1885. Baker's Flora, 247. On the shore, near the road to

Holm Island, Prof. Babington. **1889.** Westm. Notebook, 134. Lake Lancashire, C. C. Babington,[1] ex Newbould.

Lycopodium Selago L.

1778. Hudson, Fl. Ang., ed. ii., 463-4. In ericetis montosis in comit. . . . Lancast., and repeated **1787.** Withering, ed. ii., vol. 3, 70. **1796.** Withering, ed. iii., 758, and on p. 759. On Yewbarrow, Furness Fells, Jackson; and repeated in all subsequent editions. **1874.** J. of B., Miss E. Hodgson. No locality.

Lycopodium clavatum L.

1841. Phytologist, 90. One plant only in a field near Coniston Lake, Miss M. Beever; and repeated **1843.** Phytologist, 479. **1864.** Linton, Lake Country, 333. Common, no locality. **1874.** J. of B., Miss E. Hodgson. No locality.

Lycopodium alpinum L.

1796. Withering, ed. iii., 759. On Yewbarrow, Furness Fells, Jackson; and repeated in all following editions. **1805.** Turner and Dillwyn, Bot. Guide, ii., 372. Coniston Fells, Mr. Davey; and repeated **1841.** Phytologist, 33, and on p. 34. Plentiful on the fells near Coniston, Miss M. Beever; and this repeated **1843.** Phytologist, 479. **1864.** Linton, Lake Country, 333. Common on heathy fell sides. **1874.** J. of B., Miss E. Hodgson. No locality.

Selaginella selaginoides Gray.

1841. Phytologist, 90, as *Lycopodium*. In almost all our boggy ground about Coniston, Miss M. Beever; and repeated **1843.** Phytologist, 479. **1864.** Linton, Lake Country, 333. Coniston. **1882.** J. of B., 347. Lake Lancashire, W. F. Miller.

Isoetes lacustris L.

1842. Phytologist, 154. Neighbourhood of Coniston, Miss M. Beever; and repeated **1843.** Phytologist, 479. **1864.** Linton, Lake Country, 333. All the lakes.

Chara fragilis Desv.

1874. J. of B., Miss E. Hodgson. Urswick Tarn.

[***Chara hispida*** L.

1778. Hudson, Fl. Ang., ed. ii., 398. In Fossis turfosis in Lancast.; and repeated **1787.** Withering, ed. ii., vol. 2, 1016-17, and in subsequent editions; and in Turner and Dillwyn, **1805,** 365.]

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[1] C. C. Babington. See J. of B., 1895, p. 257.

Chara vulgaris (L.?).

1884. J. of B. North Lancashire, 1865, W. P. Hiern.

QUERY.—Where did he find it?

EXCLUDED SPECIES.

Dryopteris fol. minutim incisis Merrett.

1666. Merrett, Pinax, 34. On the rocks of the fells, three miles from Hawkshead, Lancashire. Marked as a new British plant by Merrett, but by whom collected—his own son or Willisel—he does not state. Record repeated in **1667** issue of Pinax, 34. Placed by Dillenius, in his edition of Ray's Synopsis, **1724,** amongst the '*Plantarum dubiarum.*' What is it—if known?

It is intended, after a while, to follow these papers by a list of omissions, additions, and corrections, for several books have turned up since the beginning in 1894. Where possible, the records of 'Bot. Record Club Reports' will be included, but they are so very difficult to follow that I scarcely know how to treat them. There is no reason why, for *comital botany,* Watson's Area 69 should be taken as a whole, and the records! I, at this time of day, dare not do the same, or others either, I fancy. But, as Hazlitt said on another matter, 'I have done what I could.'

At the close of these papers I have to thank my readers and our editor, the latter always alert, and the former, as I can prove, sometimes critical. Still, even now, there are no thanks to be rendered except to the gentlemen mentioned in the first paper, and a few correspondents *not* subscribers to 'The Naturalist.' Won't the latter help me? [And may we not ask the 'few correspondents' to help 'The Naturalist.'—ED.]

NOTE—BIRDS.

A Benevolent Sparrow.—A few days ago I witnessed a pretty act of passerine charity. All the summer a Sparrow (*Passer domesticus*) with a crippled wing has haunted my yard. On several occasions, when picking up crumbs, it has nearly fallen a victim to a cat or dog, as it has great difficulty in taking to flight. One day last week I flung some broken biscuits out of the back door, and presently after observed this Sparrow sitting on the lowest branch of a pear tree and wistfully eyeing the tempting morsels. Presently another Sparrow alighted, and, selecting a large fragment, flew up with it to the pear tree. Then moving up close to the crippled bird, it held the biscuit to its bill while it fed. I have seldom seen a prettier sight in nature than these two little birds sitting together among the ripening pears in the happy autumn sunshine, one feeding the other.—W. C. HEY, West Ayton, Yorkshire, 4th October 1898.

NOTE—BIRDS.

Wood Sandpiper in Lancashire. I have recently examined a Wood Sandpiper (*Totanus glareola*) which was shot as it rose from a pond at Droylesden, near Ashton-under-Lyne, by Mr. Peter Potts, in whose possession it still is, in August or September, about the year 1876. This species so rarely visits Lancashire that it may be of interest to add another to the instances already recorded, although it is more than twenty years since the example in question was obtained.—CHAS. OLDHAM, Alderley Edge, 29th September 1898.

NOTES—FLOWERING PLANTS.

'*Herba Bekan*' at Furness Abbey: Another Point (see 'Naturalist,' March and April 1895; August 1897, pp. 234-5).—When collecting material for the twelfth paper of the 'Constituents of North Lancashire Flora' (that containing *Atropa* and *Solanum*, Nat. August 1897) I perforce consulted West's book on Furness Abbey, and read his description of the Common Seal of the Abbey, of which, too, he gives an illustration. In the centre stands the Virgin with the Child in her arms, and springing from the ground on either side of her are two plants which West considers to represent the 'Herba Bekan.' Above these, supporting a shield on either side of the figure, are two branches with similar foliage. The question arose, was it possible to get photographs of the seal, the larger the better, and if such were procurable, would it be possible to determine the species, as the foliage seemed only conventional. I applied to Dr. T. K. Fell, of Barrow. The result was a very beautiful photograph of the seal as figured in Beck's 'Annales Furnesienses.' In this the foliage looked more like oak than anything else, but of course it was only a copy of a copy. The picture was circulated, and the consensus of opinion named it oak; one gentleman going so far as to connect it with the monks' former dwelling-place, Tulket in Amounderness, the latter word being derived from *ac*, an oak. For another purpose Dr. Fell and Mr. H. Gaythorpe, F.S.A. (Scot.) went into the matter, and have succeeded in getting a plate of the impression of the Abbey seal on the 'Deed of Surrender' to Henry VIII.'s commissioners, which is now in the Public Record Office, London, and have read a paper before the Barrow Naturalists' Club, to which they both belong. A reprint lies before me by the kindness of the authors. This seal confirms Beck's plate, and shows that West's is wrong, the foliage agreeing with the former, and the starlike things on West's, which Beck gives as trefoils (probably typifying the Trinity) come out clearly. It is a thoroughly good piece of work, this paper, worth doing and well done. Photographs ('processed,' of course) are given of the Surrender Seal, with Beck's and West's underneath —and a full page of the Deed and its signatures.

To sum up—In the last few years it has been proved, so far as such a thing can be proved,

(1) West's plate is wrong.

(2) We know nothing of Bekan, unless it be a personal name.

(3) That *Solanum dulcamara* is the 'Herba' intended.

(4) That *Atropa* is an alien at Furness Abbey, and

(5) Lastly, the foliage on the Common Seal of the Abbey is oak, therefore has nothing to do with Bekan.

To Dr. Fell fall most of the honours in this, and it is but fitting that the 'Barrow Naturalists' Field Club and Literary and Scientific Association' should issue the paper in their 'Proceedings, 1896-7,' for it has no reference to either field work or literature, and touches only briefly on natural science. —S. L. PETTY, Ulverston, 13th October 1898.

LINCOLNSHIRE NATURALISTS IN THE ISLE OF AXHOLME.

Rev. EDWARD ADRIAN WOODRUFFE-PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

The Lincolnshire Naturalists' Union held its eighteenth meeting on Thursday, 14th July, in the parishes of Haxey and Epworth, in Div. 1., in the Isle of Axholme, or more shortly in local parlance, 'The Isle.' Those present included the Rev. Wm. Fowler, M.A. (Liversedge), President of the Union; Mr. F. M. Burton, F.L.S., F.G.S. (Gainsborough), Vice-President; Rev. W. H. Daubney (Leasingham); Dr. Lowe and Mr. J. S. Sneath (Lincoln); Rev. A. Thornley (South Leverton); Rev. J. Conway Walter (Langton); Mr. B. Crow and Mr. T. Gelsthorp (Louth); Mr. P. W. Gent (Misterton); Rev. J. Gurnhill (East Stockwith); Rev. Canon J. T. Fowler (Winterton); and the Rev. E. Adrian Woodruffe-Peacock (Cadney) and Mr. R. W. Goulding (Louth), hon. secs. Mr. W. Lewington (of Market Rasen) arrived later in the day. The party had the advantage of being accompanied by two isle-men in the persons of Mr. Wm. Standring and Mr. Samuel Hudson, both of Epworth. The latter is a veteran naturalist who for many years has been a close student of the ornithology, entomology and botany of the region surrounding what he called the 'sacred city' of Epworth, and whose researches are valued by men of such eminence as Professor Newton, Mr. Gilbert Baker, and the president of the L.N.U. Mr. Standring placed his intimate topographical knowledge of the Isle of Axholme at the service of Mr. Burton, to whom had been entrusted the duty of making arrangements with regard to route, etc. These arrangements were in every way satisfactory, and materially contributed to the success of the meeting.

Detraining at Haxey Station the visitors were conveyed by drag through Craise Lound and Westwoodside. The first halt was made in Westwoodside lane, where some rough glebe land appurtenant to Haxey Vicarage was examined. It was heathy in character, and produced an abundance of plants usually associated with such a locality. The drive being resumed, the party proceeded in the direction of Haxey turbary down the Greenholme lane, a long sandy lane which yielded several good things, the principal being the now rare *Apera spica-venti*, which I believe is only to be found in The Isle now, though there it

has a wide distribution on suitable soil. Other grasses found were *Aira caryophyllea* and *Glyceria plicata*; while other interesting plants included *Senecio sylvaticus*, *Buda rubra*, *Lysimachia vulgaris*, *Thalictrum flavum*, and *Juncus bufonius*. Haxey turbary is a long stretch of unreclaimed boggy ground lying on sand prolific in rather uncommon species and rare ones. *Erica tetralix* and *E. cinerea* were abundant, and rising above them the purple flowers of *Cnicus pratensis* were much admired. *Eriophorum angustifolium*, *Drosera rotundifolia* (more rarely *D. intermedia*, I am told, for I did not see it), *Pinguicula vulgaris*, and *Habenaria bifolia* R.Br., peculiar to this sand peat and rare, though here locally plentiful. Peat-holes occurred at frequent intervals, in some of which could be found *Utricularia vulgaris*, *Hottonia palustris*, *Myriophyllum verticillatum*, *Sparganium nutans*, *Cladium mariscus*, and *Eleocharis multicaulis* Sm. At the extreme end of the turbary there is a sandy field which yielded *Scleranthus annuus*, *Filago minima*, *Urtica urens*, not generally found away from buildings in Lincolnshire, *Trifolium arvense*, *Teesdalia nudicaulis*, *Hieracium boreale* and *Achillea ptarmica*.

From Haxey turbary the members were conducted to a similar stretch of land known as Epworth turbary, taking en route *Galeopsis versicolor*, *Alisma ranunculoides*, and *Nasturtium amphibium*. The characteristic flora of the turbaries was found here also, but at Epworth two of the rarest plants seen during the day were found. These were *Alopecurus fulvus* Sm., a new record for the whole county. It was growing on sand by the pool side near the bridge where the road turns up to the village. There was plenty of it high above the water-mark. *Andromeda polifolia* is still in its old place, and there is more of it, I am glad to say. 'It grows best on the new ground after the heather and rough grass have been burnt,' Mr. S. Hudson said. Here *Drosera intermedia* was taken certainly. *Marrubium vulgare* was taken at Westgate, Belton, by the Rev. W. Fowler before the meeting. *Lysimachia nemorum* and *Thalictrum collinum*, from its Epworth station, reached me on the 20th. On the return drive to Haxey Station in the evening *Geranium pratense* was most conspicuous and plentiful.

On arriving at Epworth, half-an-hour was allowed for a visit to the church, which Abraham de la Pryme 200 years ago described as a 'pretty excellent church,' and which in more recent days has been famous from its connection with the Wesleys. When the old antiquary and naturalist visited it no doubt

Asplenium ruta-muraria was growing on the south side as it is to-day, but *A. trichomanes*, which formerly grew there, and which still grows at Owston Ferry in Div. I., was not observed on this occasion.

For Geology, Mr. F. M. Burton, F.L.S., F.G.S., reports :— The town of Epworth stands on comparatively high ground in the midst of the Isle of Axholme, the name given to a tract of land in North-West Lincolnshire, West of the Trent, and enclosed by that river and the rivers Idle, Torne and Don. The whole of this area is composed of Triassic rocks which have undergone great denudation, and are covered up almost entirely by gravel, sand, peat, and other alluvial deposits ; the only appreciable portions visible being at Crowle and Epworth, forming islands of Keuper Marl, with gypseous bands at intervals, standing out from the surrounding waste. This gypsum is met with on the surface at Epworth and Burnham, and a few other places, where it was formerly worked. In some parts it is fibrous and runs in thin veins, but in others it occurs in massive tabular blocks of great thickness and solidity. Old Leland, that laborious antiquary and careful observer of nature, born early in the 16th century, of whom one of his biographers said, 'There was scarcely either cape or bay, haven, creek or pier, river or confluence of rivers, breaches, washes, lakes, meres, fenny waters, mountains, valleys, moors, heaths, forests, chaces, woods, cities, boroughs, castles, principal manor places, monasteries and colleges, which he had not seen, and noted a world of things very memorable,' came into these parts and described in his own quaint way the very beds we are now considering : 'The upper part of the Isle hath plentiful quarres of alabaster communely there called plaster, but such stones as I saw of it were of no great thickness and sold for vii^{d} the lode ; they lay on the ground lyke a smooth table and be bedded one flake under another, and at the bottom of the bedde of them be roughe stones to build withal.'

These red marls, with gypsum bands, form the upper division of the Keuper Series, but the lower division– Sandstones or Waterstones – though not in evidence, being entirely covered up by alluvial deposits, are known to occur in the neighbourhood ; their presence being revealed by borings in various localities, as at Wroot, Lindholme, and a few other places.

It is to these beds of gypsum, which are in places of a massive and concretionary character, forming buttresses strong

enough to resist the action of the water, that we owe the existence of these higher plateaus in the midst of the surrounding waste, where the land has been ground down and swept away by rivers and floods for ages; and no doubt the harder and more durable Waterstones above referred to have assisted in preserving them from destruction.

As to the nature of the soil traversed in the excursion, there is but little to say. At Misterton—the station before that of Haxey, from which our start was made—we passed over an exposure of the Upper Keuper, in which 'thin flaggy sandstones with red and green Marls' are laid down in the 'Survey.'

Leaving Haxey Station, our route lay for some distance over sand and gravel, which, as we approached the higher land, gave place to Blown Sand, and this alternation of beds continued all round the elevated ground—Blown Sand fringing its higher slopes, and gravel and sand, with here and there some marshy peat deposits covering up the base.

This Blown Sand, which forms a very interesting characteristic feature of this part of Lincolnshire, is derived from the low-lying lands on the west, whence the sand is carried by the force of the prevailing winds on to the higher ground, where it is laid down in drift-banks, dunes and hillocks. This process is still going on at the present day in many parts of the district.

The hamlets of Park and Upperthorpe, through which we went, are built on exposed Marls surrounded by this Blown Sand. At Skiers Flash, where the peat beds are about four feet thick, and at other places we passed by, the Marl is visible in the drain bottoms. Beyond this, after crossing the sand and gravel and the Blown Sand as before, we arrived at Epworth on the top of the Keuper Hill; and on leaving it, as we approached Low Burnham, a fine section of the massive gypsum deposit referred to was exposed in a cutting on the road side.

The rest of the way continued on the Keuper Marls to Haxey village, where, descending the hill, we got on to the alluvial deposits once more—but this time in reverse order, the Blown Sand first and then the older sand and gravel—until we reached Haxey Station, our starting-point in the morning.

The Rev. A. Thornley, M.A., F.L.S., sends the following report on the Insects collected at the meeting, which have been named up to date. The rest, as worked out, will be run into the registers and published later:—'Owing to the presence of a somewhat strong northerly wind, and which had been blowing

even harder the day before, combined with the excessively dry weather, insects were scarce; nevertheless, such as were taken, particularly the Coleoptera, included many interesting species. A few have been retained for verification, but the following list contains most of those that were taken.'

LEPIDOPTERA.

Vanessa atalanta.
Vanessa cardui.
Pieris brassicæ.
Pieris rapæ.
Epinephele janira. Common.
Satyrus semele.
Pararge megæra.
Acronycta psi.
Anarta myrtilli.
Camptogramma bilineata.
Phasiane petraria. Not uncommon on the heaths.
Ematurga atomaria. Not uncommon on the heaths.

COLEOPTERA.

Hydroporus planus.
Hydroporus palustris.
Hydroporus lepidus. Two.
Hydroporus pictus. One.
Hydroporus erythrocephalus. Several.
Hydroporus pubescens. Two.
Hydroporus gyllenhali. Three.
Haliplus fulvus. Three.
Haliplus ruficollis. One.
Agabus bipustulatus. Two.
Agabus chalconotus. Two.
Rhantus bistriatus. One.
Hyphydrus ovatus. One.
Calathus cisteloides. One.
Amara trivialis. One. A melanic variety.
Anoplus plantaris. Several. On small birches on the heath.
Ceuthorrhynchus chalybeus. Two.
Ceuthorrhynchus pollux. One.
Polydrusus cervinus. One.
Rhynchites nanus (Payk.). Two from birch on the heaths.
Dorytomus pectoralis. Two. From a species of *Salix* on the heaths.
Apion cruentatum. Two.
Telephorus flavilabris. One.
Coccinella 7-punctata. Several.
Microcara livida. One.
Longitarsus ochroleucus. One.

The Mosses recorded on this occasion, or at an earlier date, for the Isle are as follows:—

Aulacomnium palustre L.
Barbula convoluta Hedw.
Barbula intermedia Brid.
Barbula rigidula Dicks.
Bryum argenteum L.
Bryum cæspiticium L.
Bryum pallens Swartz.
Dicranum scoparium L.
Didymodon rubellus B.&S.
Hypnum fluitans L.
Hypnum riparium L.
Polytrichum commune L.
Polytrichum gracile Dicks.
Seligeria pusilla B.&S.
Sphagnum acutifolium Ehr.
Sphagnum cuspidatum Ehr. and var. plumosum Nees.
Sphagnum cymbifolium Ehr.

The Isle Marls will no doubt yield some limestone-loving species which are absent from this short and very insufficient list; and the sand, peat, and warp others.

High tea was provided at the Red Lion Hotel, after which the usual meeting was held, the Rev. Wm. Fowler occupying the chair. In opening the proceedings Mr. Fowler said that it

gave him pleasure to meet the members once again. Personally he always found such gatherings very enjoyable, although in many cases he was going over ground that had long been familiar to him. When searching for plants it was quite natural to wish to find things that one had never found before, but he was always delighted to see old friends such as *Cladium* and *Andromeda* persisting in their ancient habitats. One curious feature of the district was the absence of fungi; he had not seen a single specimen during the day. There was another point he would like to revert to with satisfaction. On such excursions as the present it was a common thing to endeavour to cover a large area of ground, and in order to get through an extensive programme it was not infrequently necessary to rush over the country. On the present occasion that mistake had, he thought, been wisely avoided; the drag had accompanied them along the high road, and so they had been set down (without being unduly fatigued) at the spots really worth investigating. In conclusion he regretted the absence of Mr. F. Arnold Lees, whose presence had been anticipated.

The Rev. A. Thornley brought a message of regret for inability to attend from Mr. John Cordeaux, M.B.O.U., J.P., a former President of the Union.

NOTES—MAMMALIA.

Whales' Jaws as Gate-posts. —Re the discovery of whales' jaws near Newark, in 'The Naturalist,' p. 304. It is no uncommon sight to see the jaw-bones used as gate-posts. I know of twenty pairs at least in use now in Lincolnshire and Nottinghamshire. There are several about Kirton-in-Lindsey, and also in other cliff villages. At Newark a few years ago there was a pair at the entrance gate of the Bowling Green. I have no doubt they are there yet if they have not been taken away when improvements have been made, for their power of resisting decay is something phenomenal. I know of some that were standing in their present position when Arthur Young made his tour respecting the agriculture of Lincolnshire about 1797. The exact date is not given in his book, which was published in 1799.—Max Peacock, Cadney, Brigg, 3rd October 1898.

Carnivorous Habits of Squirrels in Lincolnshire. —On p. 320 of 'The Naturalist' I see you have a note on the squirrel (*Sciurus vulgaris*) eating young birds, above the signature of Mr. Oxley Grabham. I saw a pair do so on one occasion. The birds destroyed were the young of the Ring Dove (*Columba palumbus*). But I do not think that it is a common habit of the squirrels to do this, because I have spent the greater part of my life in outdoor pursuits and constant observation, and have only seen it done once. I have constantly seen them eat, or rather suck, the eggs of the Ring Dove. This is so much the case that where you have many squirrels few Ring Doves breed. It is no uncommon sight to see squirrels eating fungi, especially the species called mushrooms by country people. I have done so on more than one occasion. I regret I did not take samples of the species, and have them named and verified. I shall do so in the future if I come across them in the act again.—Max Peacock, Cadney, Brigg, 3rd October 1898.

ON THE HEPATICÆ AND MUSCI OF WESTMORLAND.

GEORGE STABLER,

Levens, Milnthorpe, Westmorland.

NINTH PAPER.

61. ***Plagiochila spinulosa*** (Dicks.). Caldron Snout, Teesdale (R. Spruce, 1843); Grayrigg Forest (1868); Staveley, ♀ (1869); Mardale; Stock Ghyll c. per.; Rainsbarrow; on rocks in a plantation near Staveley new church, ♂ (1872); Witherslack; Barrow Field; Langdale; Underbarrow; Barbon Fell; Long Sleddale. [♂, Bracken Ghyll, Dent, Yorks. (1877).] I do not recollect ever observing this species growing on the limestone, although *P. asplenioides* is very plentiful on it. The male plants from Staveley are the only ones I have seen in Westmorland. It would appear that they are extremely rare. Colesules are now and then abundant on female plants, but I have not been able to collect fruit.

Var. γ of Carrington's Brit. Hep., p. 60. Head of Mardale (1869).

62. ***Plagiochila tridenticulata*** Tayl. Brown Ghyll, Oxenden, Langdale (Pearson and Stabler, 1881). [Lowdore, Cumberland (Carrington and Pearson (1884).]

63. ***Plagiochila Stableri*** Pearson. Rydal Falls (29th April 1877). Vide J. of Bot. for June 1896.

64. ***Liochlæna lanceolata*** (Nees). Mill Beck Stock, Rayrigg Wood, Windermere (January 1876). See remarks on this species in the introduction to this list.

65. ***Jungermania cordifolia*** Hook. Plentiful in small runners and streamlets among the mountains. Nan Bield (1869); Mardale; Hill Bell, ♂ and ♀ (1869); Merke Side; Middleton Fell (1881); Barbon Fell; Long Sleddale (1888).

66. ***Jungermania pumila*** With. On damp rocks by river Kent, Kentmere (1872); Black Crag (1879); by river Lune, Sedbergh (1882); Groove Ghyll; Barbon.

67. ***Jungermania riparia*** Tayl. Levens Park (1869); on wet limestone rocks, Brigsteer (1872); Kentmere Plantation (1874); Whitbarrow.

68. ***Jungermania inflata*** Huds. *Gymnocolea* Dum. Mostly in boggy places. Foulshaw Moss (1869); Kentmere, c. per. (1869); Grayrigg Forest (1869); Harter Fell; Greenburn Bottom, Grasmere (Binstead, 1886); Wildboar Fell; on earth on top of Whitbarrow.

69. ***Jungermania turbinata*** Raddi. *J. affinis* Wilson. On wet limestone rocks. Levens Park (1869); The Force, Levens (1869); on the banks of river Kent, Nether Levens (1885); near Kendal (Binstead, 1885); Milnthorpe (1872); near Whitbarrow Hall (1872).

70. ***Jungermania autumnalis*** De Cand. *J. Schraderi* Mart. On a shady dry bank by the river Lune, near Ingmire Hall (1882), c. per.

VAR. ***undulifolia*** Gottsche, ♂ and ♀ c.fr. Growing with *Mylia anomala* among *Sphagna*. Barrow Field (1872).

71. ***Jungermania exsecta*** Schmid. On decaying wood, Naddle Forest, Mardale (July 1878 and May 1882). This species seems to be rare in Westmorland.

72. ***Jungermania Lyoni*** Hook. *J. quinquedentata*. Whitbarrow (1868); Heversham Head, c.fr. (1871); Witherslack (1875); Low Wood, Windermere (1869); Bow Fell; Naddle Forest; Kentmere.

73. ***Jungermania Flœrkii*** Mart. On walls, Staveley (1872); Grayrigg Forest (1869); Kentmere (Binstead, 1885).

74. ***Jungermania barbata*** Schreb. *J. Schreberi* N. ab E. Patterdale (Mr. Lyell; vide Hooker's Brit. Jung.). Black Crag, near Staveley (1869); on rocks, Witherslack (1874); Windermere (1869); Kentmere (1873); Barbon Fell (1888).

75. ***Jungermania gracilis*** Schleich. *J. attenuata* Lindenb. Rayrigg Wood, Windermere (1876); Naddle Forest (1878); shaded rocks, Patterdale (1886); Barrow Field (1872). [Near Sedbergh; and plentiful on millstone grit, Clougha, near Lancaster (1881)].

76. ***Jungermania incisa*** Schrad. On decaying moss and rotting timber. Maize Beck, Teesdale (Dr. R. Spruce, 1843); on the north face of Harter Fell (1869); Foulshaw Moss, c.fr. (1869); Hill Bell; Grayrigg Forest; Grisedale (Slater and Stabler, 1878).

77. ***Jungermania capitata*** Hook. *J. excisa* pp. (1793). *Jung. intermedia* Lindenb. Among blue-stone (Ireleth slate) rocks, Witherslack (1872).

78. ***Jungermania alpestris*** Schleich. Rydal (1868), fide Dr. Carrington.

79. ***Jungermania porphyroleuca*** Nees. Common on walls about Staveley (1869).

80. ***Jungermania ventricosa*** Dicks. ♀ and ♂, Naddle Forest (1869); Foulshaw Moss, among *Sphagna*; Witherslack, ♂ (1874); Wildboar Fell (1888).

81. ***Jungermania Orcadensis*** Hook. 'Ambleside, Mr. Lyell,' (Hooker's Brit. Jung.); ♂ plant growing amongst *Sphagnum*, *Jung. ventricosa*, and *Mylia Taylori*, Mardale (1869); by the stream on east slope of Ravenscar, Staveley (1869); Kentmere Plantation (1883); Wildboar Fell; Kettle Crags, Langdale (Binstead, 1885).

82. ***Jungermania Bantriensis*** Hook. By streams and in wet places. Garburn, Kentmere Park (1869); Kentmere Waterfall (1873); Barrow Field (1876); Kentmere Plantation (1880); Brown Ghyll, Langdale (Pearson and Stabler); Stock Ghyll (1876); Long Sleddale (Binstead, 1886); Groove Ghyll, Barbon Fell (1886).

83. ***Jungermania Helleriana*** Nees. On decaying trees, Naddle Forest, Mardale (12th May 1882). First announced as a British plant in the 'Journal of Botany,' vol. xi., p. 248 (1882). In 1884, Mr. Michie, the Queen's head forester at Balmoral, found it in the Ballochbuie Forest, and afterwards, in the same year, I gathered it on rotting pines in the Old Mar Forest, Aberdeenshire.

84. ***Jungermania minuta*** Crantz. Mardale (1869); Brunt Knot (1870); Kentmere (1870).

85. ***Jungermania Pearsoni*** Spruce. Brown Ghyll, Langdale (W. H. Pearson and G. Stabler, 1881); Bleak Rigg Crags (Binstead, 1886).

86. ***Jungermania Genthiana*** Hueb. *J. crenulata* var. *gracillima* Smith. Plentiful in the Lake District. Grayrigg Forest (1868); in a quarry near Staveley (1869); Witherslack; Whitbarrow (1873); Barbon Fell; Long Sleddale. I do not remember having seen a Westmorland specimen of *Jung. crenulata* Sm.

87. ***Eucalyx hyalina*** (Lyell). 'Immediately above Stock Ghyll Force, a waterfall near Ambleside, Mr. Lyell' (Hooker's Brit. Jung.). Kentmere Waterfall (1875); Naddle Forest (1871); Park Beck, Kentmere (1880); Barrow Field, Helsington; Scandale (W. West, 1882); Long Sleddale (1888).

88. ***Eucalyx obovata*** (Nees). On rocks in the river Kent between Kentmere Bridge and the waterfall (1872); Little Langdale (1875); Harter Fell (1877); Mardale; Long Sleddale (1888).

89. ***Nardia compressa*** (Hook.). *Alicularia* Syn. Hep. On rocks in the stream from Blea Tarn, Little Langdale (July 1875); Oxenden, Great Langdale, ♂ (1875). The distribution of this plant seems limited in Westmorland. Mr. Pearson has found it in Borrowdale, Cumberland.

90. ***Nardia scalaris*** (Schrad.). A very common plant in the Lake District. Black Crag, Staveley, c.fr. (1869); Grayrigg Forest, ♂ (1869); Windermere; Mallerstang; Tarn Crags, Helvellyn (Binstead); Mardale; Park Beck, Kentmere; Hill Bell.

91. ***Marsupella alpina*** (Gottsche). Bow Fell, 9th June 1881 (W. H. Pearson and G. Stabler).

92. ***Marsupella emarginata*** (Ehrh.). *Sarcoscyphus Ehrharti* Nees. Hill Bell, c.fr. (1869); Mardale, c.fr. (1869); Stock Ghyll; Nan Bield (1869); Staveley (1871); Kentmere, ♂ (1875); Burneside; Long Sleddale (1888).

VAR. ***pusilla*** Spruce. Bow Fell (1881); Staveley (1871); Harter Fell (1882).

VAR. ***aquatica*** N. ab E. Common in streams. Kentmere (1869). A small pale green form is found in Naddle Forest and at Rydal. *M. emarginata* I have not gathered in the limestone district.

93. ***Marsupella Funckii*** (Web.&Mohr.). Kentmere (1869); Oxenden (1881).

94. ***Marsupella olivacea*** Spruce. Rev. Bryol., 1881, p. 97. *M. Sprucei β decipiens* Limpr. Little Langdale; Bow Fell, July 1875. This species grows along with *M. Stableri* on the large stones and rocks immediately to the left of the track from the top of Rossett Ghyll to Angle Tarn.

95. ***Marsupella Stableri*** Spruce. Rev. Bryol., 1881, p. 98. Bow Fell (July 1875); Oxenden, Great Langdale, on damp rocks (1875); Nan Bield (1876). In Oxenden this species is often associated with *Acolea crenulata*. It was next found on Cader Idris, N. Wales, by Mr. Holt in 1882, and on Ben Muich Dhu in 1884 by myself. Mr. Pearson has since gathered it at Tryfan, N. Wales (1888), and in Cumberland.

96. ***Marsupella ustulata*** Spruce. Vide Rev. Bryol., 1881, p. 100. Harter Fell (May 1882); Bow Fell (1875); Oxenden (1875).

97. ***Acolea obtusa*** Lindb. *Gymnomitrium* Syn. Hep. Harter Fell, Mardale, c.fr. (1869); Hill Bell (J. A. Martindale and G. Stabler, 1870); Langdale (1875); Long Sleddale (1888). Announced as a British plant in Journ. of Bot., vol. ix., p. 318 (1880).

98. ***Acolea concinnata*** (Corda). Helvellyn (Nowell, 1857).

99. ***Acolea crenulata*** (Gottsche). North face of Harter Fell (1869); Long Stile, Mardale (1870); on a boulder.

Staveley; Oxenden, Great Langdale, c.fr. (1881); Hill Bell (1881). This was first recorded as an English plant in the Journ. of Botany, vol. ix. (1880), pp. 243 and 318. It was previously gathered in Ireland by Dr. Carrington in 1861.

100. ***Acrobolbus Wilsoni*** Tayl. *Gymnanthe.* Herr Peter Dreesen, writing from Rigmaden Park, near Kirkby Lonsdale, 4th April 1873, to Dr. Carrington, says:—'I send you some *Gymnanthe Wilsoni* which I have found in this part.' I believe there is no specimen of this in the late Dr. Carrington's herbarium, and hence it is doubtfully admitted here.

101. ***Saccogyna viticulosa*** (Mich.). On banks, Rydal (1868); by river Lune near Orton (Dr. Carrington); Black Crag, Staveley (1869); Stock Ghyll (1869); Windermere, ♂ and ♀ (1875); Ulpha (Barnes, 1872); Langdale (1875); Brown Ghyll, Oxenden (1893). [Bracken Ghyll, Dent, cum marsupia and ♂ plants (1877)].

Sub-tribe. *FOSSOMBRONIEÆ.*

102. ***Fossombronia pusilla*** (Dill. L.). In a stubble field near Ingmire Hall (1882); Arnside.

VAR. ***ochraspora*** Lindb. in Manip. Musc. Secund. (1874). Levens Park (1869); in cultivated fields, Foulshaw (16th March 1869).

103. ***Fossombronia cæspitiformis*** DeNot. Beside a spring above Whitbarrow Hall (5th Feb. 1870); fide Lindberg, Manip. Musc. Secund., p. 386 (1874).

104. ***Pallavicinia Lyellii*** (Hook.) c. per. *Blyttia* Endlicher. Foulshaw, among *Juncus conglomeratus*, where peat had previously been dug (Oct. 1874). I have since gathered it twice in the same place, but in no other part of Westmorland.

105. ***Blasia pusilla*** (L.). Beside the railway bridge near the Roman camp, Low Borrow Bridge (1869); abundant in sandy fields, Foulshaw (1872); by river Lune near Ingmire Hall (1882).

106. ***Pellia epiphylla*** (L.). Caldron Snout (M. B. Slater, 1853); very common and freely fruiting on the sides of ditches and streams, Foulshaw; Rydal (1868); Kentmere (1869); Brigsteer (1870); Kentmere Fall (1872); Mallerstang (1888); Barbon Fell (1888).

VAR. ***crispa*** N. ab E. Black Crag, Staveley (1869); Rydal (1868); Grayrigg (1869); Long Sleddale (1888).

107. ***Pellia calycina*** Tayl. Low Borrow Bridge (1872). [Bracken Ghyll, Dent, Yorks. (1877)].

Sub-tribe. *METZGERIEÆ.*

108. ***Aneura palmata*** (Hedw.). *Riccardia* B.&G. Plentiful on decaying wood, Naddle Forest (1869). This is the var. *polyblasta* Nees of Synop. Hepat.

109. ***Aneura multifida*** (Dill. L.). Mardale (1869). [Bracken Ghyll, Dent (1872); near Ulverston (1868)].

VAR. ***ambrosioides*** Nees. Near a waterfall, Grisedale (Barnes and Stabler, 1878); Broad Gate Bog, Ings (1872).

VAR. ***submersa*** Tayl. In ditches, Witherslack Moss (1875).

110. ***Aneura sinuata*** (Dicks.). *A. pinnatifida* var. a 2 *contexta* N. ab E. On the sandy marsh, Foulshaw (1872).

111. ***Aneura pinguis*** (L.). Ravenscar, Staveley (1870); Kentmere Fall (1872); by the spring near Raven Lodge, Whitbarrow; Brigsteer; Barbon Fell; Force Bridge, Levens; Langdale (1875).

112. ***Metzgeria pubescens*** (Schrank.). On an old tree stump, Barrow Field, near Kendal (1872); Deep Ghyll, Mallerstang (1888); on shaded rocks near the bridge, Kirkby Stephen (1891); on Stainmoor, near Barras (1890). In a shady ghyll at the village of Dent (1872)].

113. ***Metzgeria hamata*** Lindb. Brown Ghyll, Great Langdale (W. H. Pearson and G. Stabler, 1881).

114. ***Metzgeria furcata*** (Buddle, L.). On trees, Heversham Head (1876); Levens Park, c.fr. (1872); on rocks, Staveley (1877); Brigsteer Wood (1869); Grayrigg; Rydal (1868); Rossett Ghyll (Binstead, 1885).

115. ***Metzgeria conjugata*** Lindb. Kentmere Plantation; Park Beck (1868); Grisedale (1878); Rossett Ghyll (1875); Rayrigg Wood, Windermere (1876).

Sub-order. *MARCHANTIACEÆ.*

116. ***Marchantia polymorpha*** (L.). 'At the foot of the wall on the south side of the church, Kendal,' vide Dr. John Dalton's herbarium in Owens College Museum, Manchester; on a path of coal ashes, Greengate Cottage, Levens (Barnes and Stabler, ♂ and ♀ (1869); Sedgwick (1871); Kentmere; near the hotel, Mardale (1871).

117. ***Conocephalus conicus*** (L.). *Fegatella* Radd. 'By Garatt Pond,' Dr. Dalton (1790); plentiful on the banks of river Kent, Levens Park (1869); Brigsteer (1870); by river Eden, Mallerstang.

118. ***Reboulia hemispherica*** (L.). *Asterella.* Among limestone rocks, Levens Park, ♂ and ♀ (1869). [In a marble quarry, Dent (1872)].

119. ***Chomiocarpon quadratus*** (Scop.). *Preissia commutata* Nees. This plant is not uncommon on the slate formation of the district. Caldron Snout, Teesdale (M. B. Slater, 1853); Hill Bell (1869); Mardale, c.fr. (1869); Barbon Fell, ♂ and fr.; Grisedale (1878); Little Langdale (1875).

120. ***Lunularia cruciata*** (L.). *L. vulgaris* Mich. In rocky places, on earth, Levens Park, with undeveloped fruit (1868). Not uncommon.

Sub-order. *RICCIACIÆ.*

121. ***Riccia sorocarpa*** Bruch. On earth, among rocks, near Levens Church; Whitbarrow; in sandy cultivated fields S.W. of Bridge End, Levens.

122. ***Riccia glauca*** L. Plentiful in sandy fields S.W. of Bridge End, Levens (1869).

123. ***Riccia bifurca*** Hoffm. On soil among exposed limestone rocks, Levens Park (1870); on rocks at Arnside Point.

124. ***Riccia Michelii*** Radd. (1818). Syn. *Riccia Lindenbergii* Saut. (1845). *R. Lesquereuxii* Aust. (1869). *R. glaucescens* Carr. In sandy cultivated fields, Foulshaw.

Sub-order. *ANTHOCEROTACEÆ.*

125. ***Anthoceros lævis*** L. In a cultivated field near Heversham Railway Station; cultivated fields (sand and sandy-peat), Nether Levens and Foulshaw (1881).

126. ***Anthoceros Stableri*** Steph. in Rev. Bryol., 1895, p. 74. In the sandy part of the field across the main road and opposite the end of the sandy road from High Foulshaw (13th Nov. 1879 and Sept. 1881), and again found in plenty in Sept. 1897.

As no description of this species has yet, so far as I am aware, appeared in any English publication, I here append a translation of Herr Stephani's description, together with his further observations made in connection with the species:—

'Monoicous and dioicous, small, forming long and broad patches (tufts). *Frond* 1 cm. long, creeping and procumbent, flat from a narrow base broadly obconial, sometimes expanding almost in a circular manner after the fashion of *Riccia*, but nowhere distinctly forked; thin, nerved, and reticulated anteriorly bearing laminæ and furnished with little crests. *Capsules* from time to time set together in twos filiform 2 cm. long. *Involucres* small, cylindrical, not at all contracted at the mouth. *Pseudo-elaters* numerous, shortly articulate, surrounding the spores in a ring-like manner. *Spores*, ·042 mm. in diameter, black, fasciculato-echinate. *Androecia* in feminine plants on certain lobes, rarely on the female lobes, very frequently also

there are large alveoles in the frond. *Antheridia*, numerous (as many as * 20 in a cavity) with walls formed of *long* and *narrow* cells.

'This is the plant Spruce speaks of in his *Hepaticæ Amazonicæ et Andinæ*, in a foot-note on page 572; it resembles our common *Anthoceros punctatus* in size. . . . Both have a very thin frond which appears streaked and reticulated (when seen from above) from the subepidermous caverns, which in younger lobes of the frond are smaller and more distinctly reticulate than in the older parts. The antical epidermis of both species bears numerous little crests or scales, always with their base inserted parallel to the axis of the parts on which they stand, never oblique or across. The frond is of course forked as in other species of *Anthoceros*, but the forks or lobes are not, as in many exotic species, free to the base, but connate with each other by means of a thin lamina. The cross section of the plant, therefore, shows thin and thick parts regularly alternating, the thicker parts being the costa of the forks, which bear much larger caverns, lying over a thinner layer of solid unbroken tissue. In both species the frond runs into numerous lacinæ, which in the neighbourhood of the vegetative apex are smaller and thinner, while older and younger segments surround them, giving the whole a very irregular and torn appearance.

'*Anthoceros lævis* is a very much stouter plant, very thick and fleshy in all parts.

'As to the spores there is little difference between *A. Stableri* and *A. punctatus*, also the elaters are very similar and of no diagnostic value; very remarkable, however, are the male organs, which in most species have only two antheridia in each cavity, while our plant has them up to the enormous number of 20 (20-30, G.S.). This is, indeed, the greatest number found in any species of *Anthoceros* heretofore. In a West African species (*A. dilatatus* from the Island of Fernando Po) I have seen them growing out of the cavity in a bunch of 20 on long peduncles; in our plant they scarcely appear above the surface of the frond, their peduncles are short, and the antheridia look like eggs in a bird's nest.

'Species of *Anthoceros* if dried are not easily recognised; it is necessary to put the living plants into alcohol or brandy to enable a thorough examination.'—F. Stephani in Revue Bryologique, 1895, p. 74.

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* Soon after finding this plant I observed and counted as many as 26 antheridia in one alveole, and Dr. Spruce, on page 572 of his Hep. Amaz. et Andinæ, says;—'Antheridia valde numerosa 18-29 in quoque alveolo, invenimus.'—G.S.

MOSSES AND HEPATICS OF SKIPWITH COMMON, S.E. YORKSHIRE.

WILLIAM INGHAM, B.A.,

Organising Inspector of Schools, 47, Haxby Road, York.

I HAVE lately completed my List of the Distribution of British Mosses in the five Vice-Counties of Yorkshire, and in the County of Durham.

As the list is a very extensive one, and far too large for 'The Naturalist,' I propose to select certain well-known spots in Yorkshire and Durham, and give Lists of Mosses and Hepatics I have found there.

The present list deals with Skipwith Common only, and contains the names of 67 Mosses and 14 Hepatics, which I have found and determined during several visits to the Common in 1897 and 1898.

I am much indebted to Mr. H. N. Dixon, M.A., F.L.S., for kindly verifying all doubtful Mosses in the List, except four of the Hypnaceæ, viz., the two varieties of *Hyp. aduncum* and the last two varieties of *Hypnum fluitans*, which have been kindly verified by Dr. Braithwaite.

I am also much indebted to Mr. M. B. Slater, F.L.S., of Malton, for kindly verifying the Hepatics.

The nomenclature of the Moss List is that of the 'Handbook Catalogue of British Mosses,' by Mr. H. N. Dixon, and the nomenclature of the Hepatic List is that of the 'Moss Exchange Club Catalogue of British Hepaticæ,' compiled by Rev. C. H. Waddell, B.D.

It may be interesting to note that the Siliceous soil of this Common, and the abundance of water, are peculiarly adapted to the growth of the larger Hypna, which thrive here most luxuriantly.

SPHAGNACEÆ.

Sphagnum cymbifolium Ehrh.
Sphagnum rigidum v. ***compactum*** Schp.
Sphagnum tenellum Ehrh.
Sphagnum subsecundum Nees.
Sphagnum subsecundum v. ***contortum*** Schp.
Sphagnum subsecundum v. ***turgidum*** C.M.
Sphagnum acutifolium Ehrh.
Sphagnum fimbriatum Wils.

November 1898.

Sphagnum cuspidatum Ehrh.

Sphagnum cuspidatum v. ***falcatum*** Russ.

TETRAPHIDACEÆ.

Tetraphis pellucida Hedw.

POLYTRICHACEÆ.

Polytrichum nanum Neck.

Polytrichum gracile Dicks.

Polytrichum commune L.

DICRANACEÆ.

Ceratodon purpureus Brid.

Dicranella heteromalla Schp.

Dicranella cerviculata Schp.

Campylopus flexuosus Brid. formā.

Campylopus flexuosus v. ***paradoxus*** Husn.

Campylopus pyriformis Brid. c.fr. formā.

Campylopus pyriformis Brid. c.fr. type.

Campylopus fragilis B.&S.

Campylopus brevipilus B.&S.

The *C. flexuosus* formā and the *C. pyriformis* formā are two very interesting mosses, as showing the nearer relationship of the two species than we have been accustomed to assign to them. The *C. flexuosus* formā was growing on a wet knoll in the midst of an extensive marsh, and unapproachable except after very dry weather. It has only fairly well defined auricles in a transition stage, but this feature places it nearer *C. flexuosus* than *C. pyriformis*.

The *C. pyriformis* formā has the habit, tomentose stems, etc., of *C. flexuosus*, but, on the whole, is nearer *C. pyriformis*. If we are to admit sub-species, then *C. pyriformis* would seem to be most at home as a sub-species of *C. flexuosus*.

Dicranum bonjeani De Not.

Dicranum bonjeani v. ***rugifolium*** Bosw.

Dicranum spurium Hedw.

Leucobryum glaucum Schp.

FISSIDENTACEÆ.

Fissidens adiantoides Hedw. c.fr.

GRIMMIACEÆ.

Rhacomitrium lanuginosum Brid. A scrap only of this moss was found, but it is interesting, as the species is characteristic of our mountain moorlands.

MEESIACEÆ.

Aulacomnium palustre Schwgr. Both male plants and fruiting plants found.

Aulacomnium palustre v. ***ramosum*** Lindb.

BRYACEÆ.

Webera nutans Hedw.

Webera nutans v. ***longiseta*** B.&S.

Webera albicans Schp.

Bryum pallens Sw.

HYPNACEÆ.

Brachythecium albicans B.&S. Bright green.

Brachythecium rutabulum B.&S.

Hypnum riparium L.

Hypnum elodes Spr.

Hypnum polygamum Schp.

Hypnum polygamum v. ***stagnatum*** Wils.

Hypnum stellatum Schreb.

Hypnum aduncum Hedw. v. ***pseudofontanum*** Sanio.

Hypnum aduncum Hedw. v. ***tenue*** Schimp.

Hypnum sendtneri Schp.

Hypnum wilsoni Schp.

Hypnum lycopodioides Schwgr.

Hypnum fluitans L.

Hypnum fluitans v. ***falcatum*** Schimp.

Hypnum fluitans v. ***arnellii*** Sanio.

Dr. Braithwaite says 'arnellii' is a *good* variety.

Hypnum fluitans v. ***paludosum*** Sanio. c.fr.

The setæ of this variety vary in length, and the capsule is only half the size of that of typical *H. fluitans*. One seta I have is 4⅞ inches in length, this abnormal length being evidently due to the efforts of this moss to force its way through the entangled mass of plants in order to reach a place adapted to the development of its capsule. This seta of 4⅞ inches is probably the longest of all British mosses.

November 1898.

Hypnum exannulatum Gümb.
Hypnum exannulatum near v. ***brachydictyon*** Reu.
Hypnum revolvens Sw.
Hypnum intermedium Lind.
Hypnum cupressiforme L.
Hypnum cupressiforme v. ***ericetorum*** B.&S. c.fr.
Hypnum imponens Hedw.
Hypnum molluscum Hedw.
Hypnum scorpioides L.
Hypnum stramineum Dicks.
Hypnum cordifolium Hedw.
Hypnum giganteum Schp.
Hypnum cuspidatum L.
Hypnum schreberi Willd.
Hylocomium splendens B.&S.
Hylocomium squarrosum B.&S.

HEPATICS.

Blepharozia ciliaris L.
Kantia trichomanis L.
Kantia sprengelii Mart.
Cephalozia connivens Dicks.
Cephalozia lammersiana Hüben.
Lophocolea bidentata L.
Chiloscyphus polyanthos L.
Mylia anomala Hook.
Jungermania inflata Huds. c.fr.
Jungermania inflata Huds. A very large form.
Jungermania crenulata Sm.
Nardia repanda Hübn.
Nardia scalaris Schrad.
Fossombronia pusilla L.

NOTE—MOSSES.

***Philonotis adpressa* Ferg. in fruit in Weardale.**—On 23rd July 1898, I found the above by a stream at Wearhead. In the British Moss Flora the fruit is said to be unknown. Dr. Braithwaite writes to me—'Dixon got this in fruit last year in Scotland; yours is the second locality for fruit, and, in a paper from Arnell, I see it has been got in Norway.' Its companion was *Brachythecium rivulare* var. *latifolium* Husn.—a very marked variety of upright growth. Close by I found *Dichodontium pellucidum* var. *fugimontanum* Schp., and, not far away, *Hypnum chrysophyllum* var. *erectum* Bagnall, this making three adjoining counties—Derbyshire, Yorkshire, and Durham—for the last-mentioned moss.—WM. INGHAM, B.A., York.

THE YORKSHIRE BOULDER COMMITTEE AND ITS ELEVENTH YEAR'S WORK, 1896-97.

J. H. HOWARTH, F.G.S.,

Bradford; *Hon. Secretary to the Committee.*

The work of the Committee during the year has been seriously affected by the great loss sustained in the death of Mr. Thomas Tate, F.G.S., their valuable and indefatigable hon. secretary, but some useful additions have been made to our knowledge of erratics in the county.

Mr. P. F. Kendall, F.G.S., reports augite-syenite (Laurvikite) at Saltburn, and rhomb-porphyry at Staithes, both the most northerly points at which these rocks have been recorded. Mr. H. H. Corbett, M.R.C.S., reports Shap granite from Cusworth, near Doncaster (the most southerly record in the county so far), and others which require identifying. One matter of much interest arises from Holderness. Dr. Munthé, of Upsala University, has recognised in Mr. Stather's collection from the boulder clay of Holderness two rocks from localities adjacent to the Baltic, viz., a 'Post-Archæan' granite from Angermanland or Aland, in Sweden, and a Halléflinta, which is Swedish (? Smaland). These are much further east than previously recorded sources. The investigations of Mr. Stather show that the chalk *Belemnitellæ* found in the Yorkshire drift are of a species, *Belemnitella lanceolata*, which has never been found in the Yorkshire chalk, and is, presumably, therefore of foreign origin.

Mr. John Burton has continued his researches in the Calder Valley, and has examined some new exposures without finding anything new to him. He remarks that 'among the hundreds of boulders he has collected not one is ice-scratched, but some have evidently been planed and smoothed by glacier action which have not since been subjected to the rolling action of water, but whether they have been brought down the valley to Horbury by a glacier, or smoothed by one in the north-west and floated down by ice on the river surface and dropped at Horbury, he does not know.'

Reported by the Rev. C. T. Pratt.

Banks Bottoms, Noblethorpe.

1. Cleaved volcanic ash (probably Lake District). Now removed to the entrance of the Museum at Cawthorne.

Reported by Dr. J. TEMPEST ANDERSON.

HIGH BOROUGH (Roman Camp), NEAR GROSMONT, 345 feet above O.D.

1. Shap granite. Now removed to Grosmont Churchyard.

Reported by Mr. W. GREGSON, F.G.S.

COTHERSTONE, three miles N.W. of Barnard Castle, about 600 feet above O.D.

1. Shap granite. 22 × 20 × 12 inches. Sub-angular, striated in direction of longer axis, viz., parallel with river Tees, half-mile off N., on millstone grit.

WHASHTON, half-way between Richmond and Barnard Castle, about 700 feet above O.D.

1. Shap granite. 32 × 25 × 21 inches. Sub-angular; no striæ; on carboniferous limestone.

Reported by Mr. H. H. CORBETT, M.R.C.S.

CUSWORTH AND SPROTBOROUGH.

The district comprised in the area from the river Don to Cusworth Park is chiefly clayey land containing numerous stones. These are, in order of frequency, magnesian limestone, ganister (from 2 feet downwards), grits, quartzites, Lake District erratics, mountain limestone. The erratics found include:—

1. Shap granite. 5 × 3 × 1·5 inches. Angular. Lying on surface in stubble field.
2. Orthoclase porphyry. 14 × 12 × 9 inches. Sub-angular. On a low wall dividing two fields below Sprotborough Park.
3. Diorite (?). 6 × 4 × 3 inches. Rounded. On a wall between Sprotborough and Cusworth.
4. Basalt fragment. With one side rounded. In same field as No. 1.
5. Orthoclase porphyry. 8 × 7 × 6 inches. Angular. On a wall, quarter-mile N. of Sprotborough Park.
6. Compact basalt, with cavities lined with crystals. 14 × 12 × 9 inches. Same locality as No. 5.
7. Carboniferous grit. 22 × 20 × 12 inches. Among some perched blocks of lower magnesian limestone, near Slag Hill, and just upon the 150 feet contour line.
8. Basalt. 10 × 10 × 8 inches. Much weathered.
9. ? 6 × 4 × 3 inches. On roadside wall of Sprotborough Park.
10. Granite (?). Weathered. 8 × 3 × 6 inches. Same locality as No. 9.

11. Mountain limestone. 9 × 5 × 3 inches. Rounded. On a wall near road to the E. of Sprotborough Park.
12. Diorite. Very similar to No. 3, but smaller. In a field on the Malton Road W. of Sprotborough. The fields here are very pebbly, and numerous carboniferous grits, ganisters, etc., occur, together with a few mountain limestones and igneous rocks.
13. Diorite. More coarsely crystalline than No. 12. 5 × 4 × 3 inches. Sub-angular. In stone heap 'off the land' on footpath from Sprotborough to Cusworth.

BALBY.

1. Basalt. 24 × 22 × 20 inches. Sub-angular. In the South Yorkshire Brick Works.
2. ? 9 × 6 × 4 inches. Rounded. Same place.
3. Granophyre. 10 × 6 × 4 inches. Rounded. In Wood's Sand Pit.
4. Granite. 8 × 6 × 6 inches. Sub-angular. In Gibson's Brick Pit.
5. Granite. Found by Mr. T. Gill among stones taken from South Yorkshire Brick Works.
6. Gneiss. Same as No. 5.
7. Volcanic agglomerate. 9 × 7 × 3 inches. Sub-angular. In South Yorkshire Brick Works.
8. Quartz porphyry. 6 × 3 × 3 inches. Rounded, smooth, pink colour. In Cocking's Brick Pit.
9. ? 12 × 10 × 6 inches. Sub-angular. In South Yorkshire Brick Works.

In Gibson's Pit, 29 yards from the Worksop Road and about 13 yards from the boundary of the South Yorkshire Pit, the workings have exposed a bed of coarse sand composed apparently of the detritus of millstone grit, and containing numerous fragments of coal, together with a few rounded carboniferous boulders. The bed extends about 20 feet in the face of the till, and is about one foot thick at its thickest part. It is about 12 feet from the surface, and both above and below the till is of the usual character. In this part of the works the boulders are more numerous than in any other and are largely comprised of very hard lower magnesian limestone.

DONCASTER.

1. Basalt. 10 × 6 × 4 inches. Among the material turned out in excavating behind the Old Free Library.

Reported by Mr. J. Farrah, F.L.S.

Claro Hill.

2 Shap granites. Now removed to the Workhouse at Marton-cum-Grafton.

Reported by Mr. P. F. Kendall, F.G.S.

Saltburn.

1. Augite-syenite (Laurvikite).

Staithes.

1. Rhomb-porphyry.

These two erratics were found as pebbles on the beach; they are the most northerly occurrences of the respective rocks.

Reported by the Hull Geological Society *by* Mr. F. F. Walton, F.G.S.

Scarborough.

1. Estuarine sandstone. 4 feet 3 inches × 3 feet × 1 foot. In drift 12 feet from the surface, where the cliff was being scarped for the new road in Castle Yard.

Reported by Mr. J. W. Stather, F.G.S.

Holderness.

Dr. Munthé, of Upsala University, recognised in Mr. J. W. Stather's collection of rocks from the Holderness clays one specimen of undoubted Baltic origin, and another of which he had little doubt.

1. Post Archæan granite from Angermanland or S.W. Finland (Åland ?).
2. Halléflinta, Sweden, Smaland (?).

Holderness and South Ferriby.

The chalk belemnites fairly common in the boulder clays here have been determined by Mr. Jukes-Brown as *Belemnitella lanceolata* (Schlotheim). This belemnite is not recorded from the Yorkshire chalk; but *Bel. quadrata*, which is exceedingly plentiful in the upper chalk of Yorkshire, I have not seen in the clays.

NOTE—NEUROPTERA AND TRICHOPTERA.

Neuroptera and Trichoptera at Skipwith, near Selby.—During the past season my friend the Rev. Cyril D. Ash has again kindly boxed for me such specimens belonging to these orders as have come in his way when collecting lepidoptera. Among them are three species of interest. *Chrysopa phyllochroma*, of which the only previous county record was of an example taken on Thorne Moor in 1891; *Nothochrysa capitata*, always a good species; and *Chrysopa tenella*. The two first, and probably *C. tenella* also, were taken in Skipwith Vicarage garden.—G. T. Porritt, Huddersfield, 4th November 1898.

FUNGUS FORAY AT HAREWOOD AND EAST KESWICK.

CHARLES CROSSLAND,

Halifax; Hon. Sec. Yorkshire Mycological Committee.

THE closing excursion of 1898, held Sept. 10th and 12th, was devoted chiefly to the annual Fungus Foray. The district explored was mostly within the borders of the magnificent estates owned by the Earl of Harewood. Permission had been kindly granted by his Lordship to the members of the Union. It is just a decade since a most successful foray took place in the same locality (see 'Naturalist,' Nov. 1888, pp. 321-329). This time owing to the foresight of Mr. John Waddington and Mr. W. Denison Roebuck, neither of whom spared any pains in making the general arrangements for the carrying out of the foray—the members of the Mycological Committee were located at a farm-house in the pleasant village of East Keswick. At this cosy place, situated near the ground to be worked, there was a convenient room in which to work out the species collected, and the farm and the garden furnished a number of species to begin with. Messrs. A. Clarke, H. T. Soppitt, and the writer billeted at the same place the previous week-end, when, as a preliminary, a good number of species found about East Keswick and Harewood Avenue were determined.

On the Saturday morning, 10th September, the party, including Messrs. A. Clarke, Huddersfield; J. Needham, Hebden Bridge; W. B. Crump, M.A., Halifax; H. E. Wroot, Bradford; and J. Hemingway, Dewsbury, met at Bardsey Station and drove forward to Harewood village. Messrs. H. T. Soppitt and U. Bairstow, Halifax, arrived later in the day. Unfortunately Mr. G. Massee, of the Royal Herbarium, Kew, was unable to attend. His presence and valuable assistance was greatly missed. It is the first time this foremost of British mycologists has been absent from a Yorkshire foray. Several other mycologists who had been invited had written expressing regret at not being able to come.

At the lodge gates one of the foresters was in waiting to act as guide. The north-eastern portion of the park was selected for this day's investigation. The previous three weeks of dry weather had prepared the party to expect a scarcity of the larger and more prominent species of fungi. This expectation was soon realised; the parklands as well as the woodlands were found to be almost destitute of this class. However, having gone with a determination to make the very best use of the opportunity and the time, it was decided to turn specially to the

micro-species. These are quite as interesting and important as the larger kinds, and, moreover, may be found when the others cannot. At many previous Yorkshire forays the larger species have been so plentiful that the smaller ones have been neglected. The denser shrubberies and the damper parts of the woods were at once resorted to. There was some little comfort in the close and tedious work entered into, as the usual custom of ordering the return conveyance to meet the party at some place four or five miles distant had been broken through. Over five hours were diligently spent within a mile of the lodge gates; half an hour slipped by while a huge hollow old stump, partly embedded in moss and with the great cavity lined with chips and bits of broken branches, was being investigated. This stump and its contents yielded sixteen species, several of which proved to be new to the West Riding; this one fact is sufficient to show that there was plenty of material to go at in this particular line. When the time arrived to return it was found that a great many more species had been collected than was likely to be gone through that evening. So that as few as possible should escape attention, one member took it upon himself to stay indoors most of the time overhauling the gatherings.

Before commencing operations on the Monday morning it was found that close upon 200 species had already been determined, including those gone through the week before. The ground set out for this day's work was that portion of the estate lying out between the Harewood and Lofthouse lodges, including Pipers Wood, and the margin of the lake in front of the hall. An early start was made. This part also proved excellent collecting ground, and during the forenoon very satisfactory additions were made to the previous finds. In the few larger species it was noticed that the *Lactarii* and *Russulæ* were the most prevalent; the latter are somewhat independent of rain, the pileus very often being formed under the surface of the soil. Among the less frequently found Agarics obtained were *Amanita virosa* Fr., *Pluteus hispidulus* Fr., *P. phlebophorus* Ditm., a singular species marked by peculiar raised veins on the top of its umber-coloured pileus; *Eccilia parkensis* Fr., *Agaricus haemorrhoidarius* Schultz., *A. comptulus* Fr., abundant in a wayside potato field, and *Bolbitius titubans* Fr. Nothing particular turned up in the Polyporeæ, unless we may mention some enormous *Polyporus squamosus* Fr., and a few fine examples of *Fistulina hepatica*. The only Hydneæ were *Hydnum argutum* Fr., with its white irregularly-toothed spines, and *Caldesiella ferruginosa* Sacc. At noon it was thought desirable to get back to the rendez-

vous to lay out a few specimens for exhibition, and put in a few more hours at the examination of species. The well-lighted and airy club-room at the Old Star Inn, East Keswick, was set apart for the meeting and exhibition.

A second party, including the Rev. W. Fowler, Mr. T. Wilkinson, Bradford, Mr. W. Denison Roebuck, F.L.S., visited other parts of the park and woods under the guidance of the Rev. H. Annesley Powys, Vicar of Meanwood, and brought in a number of interesting species. After tea Mr. Fowler read the excellent paper on 'Mycology in its popular aspect,' published in the October issue of 'The Naturalist,' Mr. Soppitt exhibited some nicely mounted Uredines, and the writer a number of coloured drawings, mostly enlarged representations of micro-species. On going over the results it was found that representatives of almost every group had been secured, in all about 300 species.

Among the rarer Discomycetes were *Helvella subcostata* Cooke, *Belonidium vexatum* DeNot, *Dasyscypha carmichaeli* Mass., *D. citricolor* B.&Br., and *Erinella juncicola* Rehm. The latter is a pure white species with very long slender spores (40-50 × 2 μ) apparently quite distinct from *E. apala* B.&Br., with which species some authors have coupled it as being synonymous. In our opinion, judging from fresh specimens, it is a distinct species. There was also a *Saccobolus* new to science which will be described in a future issue of 'The Naturalist.' Many Pyrenomycetes were collected, but for lack of literature on the British species this particular branch was not thoroughly gone into. A large number of Uredines were observed. The Hyphomycetes included the very pretty *Botrysporium pulchrum* Corda. *Ceratium hydnoides* A.&S., was also noted. The latter is classed by Mr. A. Lister among the Mycetozoa or Myxogastres, and perhaps with some reason, as the conidia in germination give rise to amœboid bodies which wander about after the manner of the plasmodial cells of that borderland group. Of the real Myxogastres only nine species were seen; one of them, *Tilmadoche nutans* Pers., was in great quantity, and could be found on almost any moist stump. On one of these there was a fine unbroken patch, 16-18 inches long by 4-5 inches wide; a miniature forest. Considering the dry weather the results were generally thought to be highly satisfactory.

In the following arrangement that of the Hymenomycetes is according to Fries, but the names are as given in Massee's British Fungus Flora.

To avoid making the list unnecessarily long, species previously recorded for Harewood are omitted. In all cases H. indicates Harewood and E.K. East Keswick.

HYMENOMYCETES.

AGARICINEÆ.

Amanita virosa Fr. H.
Lepiota procera Scop. E.K.
Lepiota parvanula Lasch. H.
Lepiota seminuda Lasch. H.
Tricholoma variegata Scop. H.
Tricholoma carnea Bull. H.
Tricholoma arcuata Bull. H.
Clitocybe gallinacea Scop. H.
Collybia radicata Relh. H. & E.K.
Collybia platyphylla Fr. H.
Collybia fusipes Bull. H.
Collybia velutipes Curt. E.K.
Mycena galericulata Scop. E.K.
Mycena acicola Schæff. H. & E.K.
Mycena galopoda Fr. E.K.
Mycena stylobates Pers. E.K.
Mycena hiemalis Ost. H.
Omphalia umbellifera Linn. H.
Omphalia fibula Bull. H.
Omphalia fibula var. swartzii. E.K.
Omphalia integrella Pers. E.K.
Pleurotus dryina Pers. H.
Pluteus cervinus Schæff. E.K.
Pluteus hispidulus Fr. E.K.
Pluteus phlebophorus Dittm. Woodhall Bridge.
Entoloma prunuloides Fr. H.
Entoloma jubata Fr. E.K.
Entoloma sericea Bull. E.K.
Leptonia lampropoda Fr. E.K.
Nolanea pascua Pers. H. & E.K.
Nolanea mammosa Linn. H.
Eccilia parkensis Fr. E.K.
Eccilia griseo-rubella Lasch. E.K.
Claudopus byssisedeus Pers. E.K.
Pholiota erebia Fr. H.
Inocybe obscura Pers. H.
Inocybe eutheles B.&Br. E.K.
Galera tener Schæff. H. & E.K.
Agaricus arvensis Schæff. H.
Agaricus campestris Linn. H. & E.K.
Agaricus hæmorrhoidarius Kalch. H.
Agaricus comptulus Fr. H.
Stropharia semiglobata Batsch. E.K.
Psilocybe areolata Klotch. H.
Psilocybe fœnisecii Pers. H. & E.K.
Psathyra semivestita B.&Br. E.K.
Psathyra urticæcola B.&Br. H. & E.K.
Anellaria seperata Karst. E.K.
Anellaria fimiputris (Bull). E.K.
Panæolus fimicola Fr. H.
Psathyrella disseminata Pers. H.
Psathyrella atomata Fr. E.K.
Coprinus niveus Pers. E.K.
Coprinus lagopus Fr. E.K.
Coprinus radiatus Fr. E.K. & H.
Coprinus plicatilis Curt. E.K. & H.
Coprinus hemerobius Fr. E.K. & H.
Bolbitius titubans Bull. E.K. & H.
Bolbitius tener Berk. H.
Hygrophorus pratensis Pers. E.K.
Hygrophorus virgineus Wolf. E.K.
Hygrophorus miniatus Fr. H.
Hygrophorus obrusseus Fr. H.
Hygrophorus conicus Scop. H. & E.K.
Hygrophorus chlorophanus E.K.
Hygrophorus psittacinus Schff. E.K.
Lactarius quietus Fr. E.K.
Lactarius subumbonatus Lind.
Russula adusta Pers. H.
Russula delica Fr. H.
Russula olivescens Fr. H.
Russula furcata Pers. H.
Russula purpurea Gillott. H.
Russula virescens Schæff. H.
Russula olivacea Schæff. H.
Russula cyanoxantha E.K. & H.
Russula fœtens Pers. H.
Russula subfœtens Smith. H.
Russula veternosa Fr. H.
Russula integra Linn. H.
Marasmius urens Bull. H.
Marismius oreades Bolt. H. & E.K.
Marismius rotula Scop. E.K.
Lentinus cochleatus Fr. H.

POLYPOREÆ.

Boletus elegans Schum. H.
Boletus subtomentosus L. H.
Boletus luridus Schæff. H.
Boletus laricinus Berk. Woodhall Bridge.
Polyporus squamosus Fr. H.
Polyporus giganteus Fr. H.
Polyporus hispidus Fr. H. & E.K.
Fomes fomentarius Fr. E.K.
Fomes ferruginosus. H.
Polystictus versicolor Fr. E.K.
Polystictus abietinus Fr. H.

Poria vaporaria. E.K.
Poria blepharistoma B.&Br. H.
Poria sanguinolenta A.&S. Woodhall Bridge.
Trametes mollis Fr. H.
Dædalea quercina Pers. H.

HYDNEÆ.

Hydnum argutum Fr. H.
Caldesiella ferruginosa (Fr.). H.

THELEPHOREÆ.

Stereum hirsutum Fr. E.K.
Stereum sanguinolentum Fr. H. & E.K.
Corticium lividum Pers. E.K.
Corticium sambuci Fr. H.
Cyphella capula Fr. H. & E.K.
Cyphella pimii Phil. H.
Cyphella villosa Karst. Woodhall Bridge.

CLAVARIEÆ.

Clavaria cristata Pers. H.
Clavaria vermicularis Scop. H. & E.K.

TREMELLINEÆ.

Calocera cornea Fr. H.
Dacryomyces deliquescens Duby. H.
Dacryomyces stillatus Nees. H. & E.K.

GASTROMYCETES.

Scleroderma verrucosum Pers. H.
Scleroderma bovista Fr. H.
Cyathus striatus Hoffm. H.
Cyathus vernicosus DC. E.K.
Sphærobolus stellatus Tode. H. & E.K.
Lycoperdon gemmatum Batsch. H.
Lycoperdon bovista Linn. E.K.
Lycoperdon nigrescens Vitt. H.
Lycoperdon cepæforme Bull. H. & E.K.

UREDINEÆ.

Uromyces polygoni (Pers.). E.K.
Uromyces trifolii (A.&S.). H.&E.K.
Uromyces rumicis (Schum.). E.K.
Puccinia lapsanæ (Schultz.). E.K.
Puccinia pulverulenta Grev. E.K.
Puccinia violæ (Schum.). Woodhall Bridge.
Puccinia menthæ Pers. E.K.
Puccinia saniculæ Grev. H.
Puccinia rubigovera (DC.). E.K.
Puccinia poarum Neilsen. H.&E.K.
Puccinia caricis (Schum.). H.
Puccinia obscura Schröt. E.K.
Puccinia suaveolens (Pers.). E.K.
Puccinia hieracii (Schum.). H.&E.K.
Puccinia centaureæ Mart. Woodhall Bridge.
Puccinia taraxaci Plow. E.K. & Woodhall Bridge.
Puccinia glomerata Grev. E.K.
Puccinia veronicarum DC. Woodhall Bridge.
Phragmidium fragariastri (DC.). E.K.
Phragmidium subcorticatum (Schrank.). E.K.
Melampsora lini (Pers.). E.K.
Melampsora epitea (Kze.&Schum.). Woodhall Bridge.
Melampsora circææ (Schum.). Woodhall Bridge.
Coleosporium sonchi (Pers.). H., E.K., & Woodhall Bridge.
Coleosporium campanulæ (Pers.). E.K.
Coleosporium euphrasiæ (Schum.). Woodhall Bridge.

ASCOMYCETES.

DISCOMYCETES.

Helvella subcostata Cooke. Woodhall Bridge.
Otidea alutacea (Pers.). Woodhall Bridge.
Peziza subrepanda Cook & Phil. Woodhall Bridge.
Peziza adæ Sadler. E.K.
Humaria carbonigena (Berk.). E.K.
Humaria granulata (Bull.). H. & E.K.
Barlæa violascens (Cke.). Woodhall Bridge.
Dasyscypha virginea (Batsch). Woodhall Bridge.
Dasycypha citricolor B.&Br. H.
Dasyscypha carmichaeli Mass. H.

Lachnea coprinaria (Cooke).
H. & E.K.
Lachnea hemispherica (Wigg). H.
Tapesia fusca (Pers.). H.
Helotium clavo-flavum (Grev.). H.
Helotium pallescens (Fr.) E.K.
Helotium uliginosum (Fr.).
Helotium cyathoideum (Bull.).
H. & E.K.
Helotium scutulum (Pers.). E.K.
Helotium herbarum (Pers.).
H. & E.K.
Helotium gramineum Phil.
H. & E. K.
Belonidium vexatum DeNot. E.K.
Mollisia atrocinerea (Cooke). E.K.
Mollisia cinerea (Batsch).
H. & E.K.
Ascophanus granuliformis Bend. H.
Ascophanus ochraceus Bend. H.
Ascophanus carneus (Pers.).
H. & E.K.
Ascophanus carneus var. testaceus (Moug.). H.
Ascobolus furfuraceus Pers.
H. & E.K.
Orbilia leucostigma (Fr.). Woodhall Bridge.
Cenangium pulveraceum (A.&S.). H.
Cenangium dryinum (Cooke). E.K.
Trochila ilicis (Fr.). H.
Rhytisma acerinum (Pers.). H.

PYRENOMYCETES.

Cordyceps militaris (Fr.) H. & E.K.
Claviceps purpurea Tul. H. & E.K.
Hypocrea rufa Fr. E.K.
Hypocrea gelatinosa Fr. H.
Hypomyces aurantia (Fr.) H.
Nectria cinnabarina Fr. H.
Nectria sanguinea Fr. Woodhall Bridge.
Nectria mammoidea Ph.&Pl. H.
Sphæria spermoides Hoffm.
H. & E.K.
Sphæria rubella Pers. E.K.
Sphæria rostellata Fr. H.
Stigmatea robertiani Fr. Woodhall Bridge.
Erysiphe graminis DC. H.&E.K.
Erysiphe martii Link. H.&E.K.
Erysiphe montagnei Lev. E.K.

USTILAGINEÆ.

Urocystis anemones (Pers.). E.K.

PHYCOMYCETES.

Pilobolus crystallinus Tode.
H. & E.K.
Pilaria anomala Schroet. H.
Mucor mucedo Linn. H.
Spinellus fusiger Van Tieg. H.
Sporodinia aspergillus Schroet. H.
Peronospora trifoliorum DeBary.
H. & E.K.

HYPHOMYCETES.

Botryosporium pulchrum Corda. H.
Gliocladium lignicolum Grove. H.
Trichoderma lignorum Harz.
H. & E.K.
Penicillium glaucum Link.
H. & E.K.
Rhinotrichium niveum Cooke & Mass. E.K.
Botrytis cinerea var. sclerotiophila Sacc. E.K.
Sepedonium chrysospermum Fr. H.
Torula herbarum Link. H. & E.K.
Cladosporium herbarum Link. H.
Cladosporium fulvum Cooke. H.
Stilbum fimetarium B.&Br. H.
Isaria farinosa Fr. H.
Ægerita candida Pers. H.& E.K.

MYXOGASTRES.

Ceratium hydnoides A.&S. H.
Stemonites fusca Roth. H.
Stemonites friesiana DeBary. H.
Reticularia lycoperdon Bull. H.
Perichæna depressa Lib. Woodhall Bridge.
Arcyria punicea Pers. H.
Arcyria nutans (Bull) Grev. H.
Chondrioderma difforme (Pers.) Rost. Woodhall Bridge.
Spumaria alba DC. H.
Tilmadoche nutans (Pers.) Rost. Woodhall Bridge.

MISCELLANEOUS.

Dinemasporium graminum Lev. H.
Phoma longissima B. H. & E.K.
Schinzia alni. H. & E.K.

NEW PLANT RECORDS FOR NORTH LANCASHIRE, 1897 AND 1898.

S. LISTER PETTY.

Ulverston, North Lancashire.

Since Mr. Henry's list, 1897, the following new records have turned up. The rest are given as extensions of area. All are subject to correction if proved to be included in the records of any society, and published before this date. To the best of my knowledge those marked * are new to the Lancashire portion of Watson's V.C. 69. The water-colour drawings by Miss Burton of local plants are all dated, located, and beautifully done. My thanks are due to her for permission to print the evidence given by these drawings.

**Epimedium alpinum* L. Alien. Woods, Lakeside end of Windermere, Miss Burton. Nothing seems known of its introduction, but it is quite naturalised now.

Pulicaria dysenterica Gærtn. Native. Roadside ditch, Walney Island, 1888. Seen again 1898. (Previously recorded for N. Lancs, 1889, Westm. Notebook, Extracts from Lawson's Notebook, circ. 1680; by Aldingham-in-Furness, T. Lawson.)

**Carduus nutans* L. Native. Booked from Rampside, 1888, but no specimen taken. Drawn from Rampside, 1898, Miss L. Burton.

Cnicus heterophyllus Willd. Native. Drawn from Finsthwaite Churchyard by Miss Burton. This was the species about which some of the newspapers made so much fuss. A Scotch thistle on the grave of a descendant of the Pretender! (Recorded from Newby Bridge by Miss E. Hodgson, J. of Bot., 1874.)

**Linaria purpurea* L. Alien. Wall top, Bardsea Hall, and at foot of wall on roadside, 1888. On the walls of Furness Abbey, very fine, 1897. Drawn from Bardsea Hall by Miss Burton.

**Veronica scutellata* L. Native. Not previously recorded. Bank of tank at Knott Hollow Tarn, near Ulverston, 1898.

Gentiana campestris L. Native. In various shades of colour from type through pale lilac to white; abundant between Grange and Cartmel, Miss Burton. (Isaac Hall recorded it

from Newton-in-Cartmel i.e., the other side of Grange—in Withering, and was followed, without locality, by Anthony Mason in Aspland's Guide, 1869.)

****Omphalodes verna*** Mœnch. Alien. Garden escape, or is it one of the plants of which legend tells, sown or planted years ago to astonish visitors in the Lake neighbourhood? Drawn from Finsthwaite by Miss Burton, who says it is now thoroughly naturalised.

Lathræa squamaria L. Native. Drawn from Finsthwaite by Miss Burton. (Previous record, 1864, Linton, Lake Country, Coniston.)

Colchicum autumnale L. Alien. Fields near Finsthwaite House, W. Duckworth; and other localities, Miss Burton. (Previous record near Newby Bridge, Jas. Woods in Turner and Dillwyn, Bot. Guide, 1805, and often repeated.)

****Corallorhiza innata*** R.Br. Native. Drawn from 'Woods, Lakeside end of Windermere,' Miss Burton.

****Narcissus poeticus*** L. Alien, of garden origin probably. Drawn from Lakeside end of Windermere, Miss Burton. Reported some years ago from a field near Woodland, but I failed to find it.

****Zannichellia palustris*** L. Native. One bit among rubbish on shore at Bardsea, 1898. Mr. Melvill, to whom the scrap was sent, writes '*Z. p. vera.*' Original habitat at present unknown to me.

One of the most striking of Miss Burton's drawings is *Rosa carolina* var. *nuttalliana*, so certified by Kew people, which has established itself on an island in the Leven, and is found frequently in the woods surrounding Windermere Lake. Probably birds have had something to do with this general dispersal, but so conspicuous an alien may be put down as of undoubted garden origin.

NOTE—ORNITHOLOGY.

Spotted Redshank in the East Riding.—This summer I happened to be in a certain village, within ten miles of the city, which is somewhat renowned for the various rare birds that have occurred there at different times. I was shown a collection of local birds, and among them one which was named the Stilt Plover. I took it down from the top of a bookcase, and removed a considerable quantity of dust from it, and I then saw that it was a young Spotted Redshank (*Totanus fuscus* L.). It was obtained in August 1896, but as the species has occurred so seldom in the county, I venture to record it, after this lapse of time, in the pages of 'The Naturalist.' Through the kindness and courtesy of its former owner, it is now in my possession.—OXLEY GRABHAM, M.A., York, 7th Oct. 1898.

ON A CERTAIN STRUCTURE IN THE LAKELAND LAVAS.

P. Q. KEEGAN, LL.D.,

Patterdale, Westmorland.

In the discussion which followed the reading of a paper by Mr. Ward on 'The Comparative Microscopic Structure of some Ancient and Modern Volcanic Rocks,' before the Geological Society in 1875, the author, alluding to the decided flow round the imbedded fragments which occurs in some of the Lake District volcanic ash rocks, observed that 'this flow was not a decided crystalline one, but one merely of chloritic material around the larger fragments and frequently along the bedding planes.' He opines that the darkness which occurs when the thin section of the ash is viewed under the microscope with crossed nicols 'is mainly due to an immense number of very minute particles of chlorite, which are probably a product of alteration perhaps formed long after the origination of the rock.' Mr. Rutley, on the other hand, likened the particles to devitrified matter like as in pitchstone, and held that the flow was not due to metamorphism. I have examined several micro-sections of volcanic ash of this neighbourhood (Patterdale), and I confess I have never seen therein anything comparable to the phenomenon which Mr. Ward has described. The most prominent of these ash-rocks contain very numerous crystals of altered felspar, which are wedged or cemented into the fine 'base' comparatively closely together so as to leave only narrow intervals between them, and in these intervals there is no specially prominent aspect of anything approaching a flow structure. In the more arenaceous ash deposits, as, e.g., of Hall Bank, where the amount of base is considerably greater, and 'the porphyritic' constituents are set wide apart, there are no definite flowing lines distinctly observable. No doubt we observe a sort of network of dark brown clots and sprinklings diffused over some portions of the slide, but these are not formed of chloritic material (more probably they are ferruginous) and are not disposed in a regular and orderly manner.

Everything connected with these ancient rocks is of impressive interest, but inasmuch as they are clearly much altered and metamorphosed, the greatest caution is requisite, not only in the observance of them, but in the forming and expressing any

decided dogmatic opinion anent their structure and origin. Even when we hammer off a chip of what to all appearances is a fresh and 'clean' bit of rock, we are all the more disappointed when a micro-section thereof is prepared, and we try very hard to make out exactly what is to be seen therein under the microscope. Judging from my own experience, I should say that the majority of investigators of these old structures are at first very much disposed to mistake lavas for ashes, and not vice-versâ. The fault may be set down first to not having the sections thin enough, and secondly to want of experience. In many cases I believe it is next to impossible to decide definitely whether a given rock is an ash or belongs to a flow, unless the section is not only as thin as possible, but is also as uniformly thin as can be made. The 'hyalopilitic' structure, i.e., the felted aggregation of slender laths and microlites of felspar in the ground-mass of the andesitic lavas, is sometimes so completely obscured and blotted out, so to speak, by what we may call the parallel flaky or confused felted aggregates, which seem to attend the metamorphosis of every part of the rock, that it can be discerned only with difficulty by the help of high magnification and crossed nicols. And yet, unless we are clearly satisfied that such structure exists, or has existed, we never can be sure whether we have before us a lava or an ash. For example, in a rock from Silver Hill of which I possess a very thin and uniform section, the porphyritic crystals of felspar are tolerably well preserved, although 'streaky' and containing irregular patches of a strong, doubly-refracting muscovite, and most of the augite crystals are still sharp in outline being only partially changed externally; nevertheless, the ground-mass viewed with ordinary light seems to be a completely uniform fine threadwork in which are imbedded innumerable minute granules at regular intervals—the whole very comparable to the aspect of a vegetable nucleus prepared and stained and observed with very high magnification; all over this threadwork, which seems to invade the felspar and augite crystals as well, there is a very even distribution of not very similar sized patches or blotches of a light to dark brown matter which seems to be partly chloritic and partly ferruginous. When, however, we use a rather higher objective and have crossed nicols, we then observe, though not very definitely, small tiny laths and microlites with their long axes lying mostly parallel to the longer sides of the porphyritic felspars. In another lava collected from the same hill screen, but about one mile further south, the

ground-mass exhibits a similar 'threadwork' structure, but the felspar laths are distinctly discernible with ordinary light and a low power, although there is here a decidedly greater and more disorderly distribution of the brownish flakes and blotchings than in the above instance. Again, in a lava (set down in the Geological Survey maps as an ash) from Stybarrow Crag the same 'threadwork' texture is visible in the ground-mass, and the tiny laths are clearly visible in the beautiful thin section now before me, but the whole is decidedly lighter and brighter owing to the comparative paucity of the brown spots, which, however, vary much in size, shape, and opacity. Similar remarks apply to the more typical augite-andesite of the environs of Derwentwater and, in fact, to all the undoubted Lake District andesites which I have had the opportunity of observing microscopically.

On the other hand and contrariwise, a section of a comparatively fresh and unaltered augite-andesite from Himmerich Honnef, Rhine, does not exhibit any such 'threadwork' structure in its glassy ground-mass, nor is there the slightest invasion thereof into the felspar crystals, although some of the augite shows traces of it apparently. It would appear, then, from this observation that in andesites the augite is the first to yield, i.e., the loss of iron and magnesia commences there; it is otherwise in the case of basalts, where the felspar has been found to decompose before the augite and olivine have begun to give way. If we examine a thin section of a sandstone, or of an arkose, or of an apparently clastic specimen of Hornblende-Gneiss from Sutherland, or, most interesting of all, the 'base' of a genuine volcanic ash, we can detect in none of these structures the slightest symptom of the peculiar decomposition phenomena afore-described. The mineral constituents of all these rocks, although, except the last mentioned, apparently water-worn and with their angles and edges rounded by attrition, seem apparently to be, notwithstanding their venerable age and standing, comparatively fresh and unchanged.

What is here especially broached and advanced in this brief paper is, that the 'threadwork' structure herein described and due, no doubt, to a process of devitrification, i.e., to the formation of definite silicates out of and in the heart of a homogeneous glass when an excess of basic matter occurs there, may possibly be of service towards supplying some sort of clue as respects the real origin of certain rocks, more particularly as to whether they are really ashes or lavas, clastic or pyroclastic.

December 1898.

NOTES—ORNITHOLOGY.

Tameness of Robins. This is proverbial but I think I never had it brought so forcibly before my notice as was the case recently. I have been staying for some time at Easington, in Holderness, and in the garden of the well-known naturalist, Mr. Philip Loten, were the tamest Robins (*Erithacus rubecula*) I ever saw. They were bred in an old tin kettle which was in the hedge at the bottom of the garden, and they followed Mr. Loten about all over; one especially would perch on his boot when he stood still, and when he said 'Whistle, Bobbie,' it would put its head on one side and begin to sing. When we were sitting in his workshop skinning and stuffing birds it would come in and perch upon the backs of the chairs. In this particular bird I noticed how quickly the red breast appears, first there was one little red dot, and in a few days the full colour was obtained. OXLEY GRABHAM, M.A., M.B.O.U., York, 7th October 1898.

The Kingfisher at Huddersfield. It will be remembered that in 'The Naturalist' for January last (p. 10) I recorded the occurrence, on 23rd December 1897, of a Kingfisher (*Alcedo ispida*) on the ponds in the Crosland Hall grounds. To my regret that bird seemed to depart at once, and was not seen here again until 18th August of this year, when I caught a good sight of it (or another) on the same ponds. From that date until 13th September, it evidently never left the immediate vicinity of the ponds, as I constantly saw it flying over the larger of the two, and could, indeed, almost at any time disturb it from the low branch of a tree which quite overhangs the pond, and which it had apparently chosen as its resting or hunting perch. After 13th September I looked for it in vain, but since then a Kingfisher has been observed on the Meltham Mills reservoir, about a mile and a half from here. Unless all the three occurrences relate to the same specimen, which I think is most likely, this lovely bird is of more frequent occurrence in this district than was supposed. Is the Kingfisher known to be a wanderer from pond to pond in the district it frequents? It would, too, be interesting to know where it spent the nesting season, and if it found a mate. G. T. PORRITT, Crosland Hall, Huddersfield, 4th Nov. 1898.

NOTE—FLOWERING PLANTS.

Lobelia and Vaccinium near Windermere: a Question of County. Ante p. 320. Will you allow me to traverse the statement that Cranberry is 'very rare' in the Lake District? A reference to Baker's 'Flora,' imperfect though the records there given are, would have no doubt modified the assertion. Mr. Baker says 'Not infrequent.' In the same book *Lobelia* is recorded from Blea Tarn (500 yards), and the record in 'Naturalist' can scarcely be so high as that. Unfortunately, your correspondent gives neither county nor height of tarn in which the plant was seen. The comital census of either species has nothing to do with its comital value, i.e., its local distribution; to get this we must have a locality. Where was the tarn, in Lancashire or Westmorland? Half a mile from Storrs, to the southward, is the boundary between these counties, and it is a bad one to follow. All the inhabitants of the district know where it is and will tell on being asked. I must apologise to Mr. Tuckwell for writing in this manner, but, as it is, the record is useless.

Is it too much to ask from visitors to the district, who botanise, that if they print a list, long or short, a locality and the county be given for each species? There is no guide book issued which is equal to the Ordnance Survey Maps (in my opinion [and ours—ED. NAT.]), and I never work without one. They cost a trifle more than a book, certainly, and if large are bothersome, but they obviate all mistakes in location and save time.—S. L. PETTY, Ulverston, 3rd October 1898.

YORKSHIRE BIRD-NAMES.

OXLEY GRABHAM, M.A., M.B.O.U.,

York.

I was much interested in Rev. W. C. Hey's list of local bird-names, and as it is a subject to which I have paid considerable attention, I may be able to give several that will be new to him. It is a point worthy of notice that some of the most familiar birds are addressed by a well-known human name, as it were a term of endearment; e.g., 'Jenny Wren,' 'Jenny Ullet,' 'Willy Wagtail,' 'Fanny Flirt-tail,' 'Peggy Whitethroat,' 'Tommy Stint,' 'Robin Redbreast,' and in old books 'Philip Sparrow' is mentioned, though I have never heard the term used either in my own county or in any other. It will be observed also that alliteration lends its artful aid. I am inclined to think that the term 'teäfit' is onomatopœic, expressive of the cry of the bird, as is pee-wit for the same, 'Ü-tick' for the Whinchat, and 'Whēeor' for the Wigeon. I cannot vouch for the spelling of these names. Many of them I have never seen put down on paper, and I have followed the phonetic principle as far as I could. I append a list of the Yorkshire terms I have heard at various times and in various parts of the county:
Mistle Thrush, 'Storm Cock'; Song Thrush, 'Throstle'; Fieldfare, 'Felf' or 'Felfer'; Whinchat, 'Ü-tick' and 'Grasschat'; Redstart, 'Firetail' and 'Fanny Flirt-tail'; Redbreast, 'Robin' and 'Bobbie'; Whitethroat, 'Haychat' and 'Peggy Whitethroat.' The Willow Wren and Chiffchaff are known as 'Featherpokes,' though occasionally I have heard this term applied to the Longtailed Tit; Hedge Sparrow, 'Cuddy'; Dipper, 'Water Ouzel' and 'Water Crow'; Longtailed Titmouse, 'Bottle Jug'; Great Titmouse, 'Oxeye' and 'Blackcap'; Blue Titmouse, 'Bluecap' and 'Billybiter'; Wren, 'Jenny Wren' and 'Tomtit'; Wagtails in general, 'Dishwashers' and 'Willy Wagtails'; Meadow Pipit, 'Titlark' and 'Titling'; Shrikes in general, 'Butcher birds'; Greenfinch, 'Green Linnet'; Goldfinch, 'Redcap'; Sparrow, 'Spadger'; Chaffinch, 'Spink'; Bullspink, 'Pink' and 'Weetie'; Brambling, 'French Linnet' and 'Mountain Finch'; Linnet, 'Grey Linnet,' to distinguish it from the green; Twite, 'Mountain Linnet'; Bullfinch, 'Bully'; Corn Bunting generally spoken of as an ''Owd Bulting'; Yellowhammer, 'Goldie' and 'Yowlring'; Reed Bunting,

'Reed Sparrow'; Snow Bunting, 'French Sparrow'; Starling, 'Shep,' 'Shepster' and 'Gyp Starnel'; Jay, 'Jee Bird'; Magpie, 'Pyat'; Jackdaw, 'Jackerdaw'; Carrion Crow, 'Car Crow'; Hooded Crow, 'Hoodie'; Swift, 'Devil Screamer' and 'Devil Squeaker'; Nightjar, 'Goatsucker'; Green Woodpecker, 'Yaffle'; Owls, 'Hoolet' and 'Jenny Ullet'; Hawks, 'a Nawk'; Kestrel, 'Windhover'; Cormorant, 'Gormer'; Gannet, 'Solan Goose'; Heron, 'Heronsew'; Sheld Duck, 'Scald Duck'; Shoveller, 'Spoonbill'; Pintail, 'Sea Pheasant'; Wigeon, 'Wheeor'; Pochard, 'Dunbird'; Scaup, 'Mussel Duck'; Golden Eye, females and young males are known as 'Morillons'; and I know one or two professional wild-fowlers who, in spite of all I can say to them, will persist in declaring that they are a distinct species; Eider, 'St. Cuthbert's Duck'; Common Scoter, 'Black Duck'; The Goosander, Redbreasted Merganser and Smew are known, irrespective of species, as 'Sawbills' or 'Sawbilled Ducks'; Ring Dove, 'Cushat' and 'Wood Dove'; Partridge, 'Partrig'; Landrail, 'Corndrake'; Coot, 'Bald Coot'; Ringed Plover, 'Sand Runner'; Lapwing, 'Green Plover,' 'Teäfit,' 'Tewit,' and 'Peewit'; Common Snipe, 'Long Neb'; Dunlin, 'Tommy Stint' and 'Jack Plover'; Knot, 'Knot Plover'; Common Sandpiper, 'Sand Snipe' and 'Summer Snipe'; Green Sandpiper, 'Wheat Bird' and 'Drain Swallow'; Spotted Redshank, 'Stilt Plover.' Terns generally are known as 'Sea Swallows'; Gulls are known as 'Mauls'—those that follow the plough being distinguished as 'Land Mauls.' Kittiwakes are called 'Kitties,' and the young, 'Tarrocks.' The Skuas and Little Auks are known to the fishermen by most expressive names—in the former case ('Shyteawks' and 'Todburds') owing to a certain habit, and in the latter ('Feartinarse') derived from a peculiarity in their anatomy. I have also heard the Little Auk termed the 'Iceland Auk'; Guillemot, 'Guillemow' and 'Scoot'; Puffin, 'Sea Parrot'; Little Grebe, 'Tom Pudding' and 'Puffer'; Storm Petrels, 'Mother Carey's Chickens.'

For the sake of more precision I append notes of the localities in which some of the above names are used.

In the West Riding. 'Ütick,' 'Cuddy,' 'Yowlring,' 'Shep,' 'Shepster,' 'Devil Screamer,' 'Yaffle,' 'Tewit,' 'Tom Pudding,' 'Featherpokes,' 'Dishwasher,' 'Heronsew.'

In the North and East Ridings.—'Goldie,' 'Water Crow,' 'Tom Pudding,' 'Bottlejug,' 'Devil Squeaker'; names of Ducks and Gulls, 'Cuddy,' 'Gyp Starnel,' 'Heronsew.'

Naturalist.

In the neighbourhood of Pickering is the only place where I have heard Little Grebes called 'Puffers,' and in the dales Dunlins are called 'Jack Plover,' 'Stints' on the coast.

The following are all Holderness terms from the neighbourhood of Easington: 'Bulting,' 'Scald Duck,' 'Wheatbird,' 'Whēēŏr,' 'Teäfit,' 'Sand Runners,' 'Mauls'; 'Woodcock Pilot' for the Golden-crested Wren (a name which I omitted above).

NOTES—BIRDS.

Vernacular Names of Birds at Kirkburton.—When I was living at my home at Kirkburton, near Huddersfield, some eight or nine years ago, I collected as many local names of birds as I could, and seeing Mr. Hey's request at the end of his article in this month's 'Naturalist,' I thought it might be of use to you. The Missel Thrush is called 'Stormcock'; Song Thrush, 'Throstle'; Hedge Sparrow, 'Dunnock'; Pied Wagtail, 'Waterty-wag'; Greenfinch, 'Green Linnet'; Chaffinch, 'Spink'; Yellow-hammer, 'Youldring,'; Starling, 'Shep' or 'Shepster'; Magpie, 'Pianot'; Rook, 'Crow'; Chiffchaff, 'Featherpoke'; Willow Wren, 'Peggy'; Whitethroat, 'Small-straw'; Fieldfare, 'Filfer'; Wren, 'Jenner.' Owls seem to go under the name of 'Howlets.' The Blue Tit is, I think, generally called 'Tomtit,' and the Great Tit and Cole Tit are 'Blackcaps.' I sent the above list to the schoolmaster of the village, Mr. F. Jackson, for verification, and I think the names are all correct.—F. R. Collins, *22*, Needham Street, Nechells, Birmingham, 16th October 1898.

Vernacular Names of the Lapwing and Other Birds.—On p. 308 of 'The Naturalist,' the Rev. W. C. Hey gives a list of local names for birds used in the West Ayton neighbourhood. Among these he gives 'Teäfits' as the name used for Plovers. By Plovers I take him to mean the Lapwing (*Vanellus vanellus*). He then continues, 'I imagine the word alludes to the tuft on the bird's head, and is a dialectic form analogous with "teäf" for tough, or "beöf" for bough.' Surely this is a mistake. In Lincolnshire we have the variants 'Peewit,' 'Peawit,' and 'Pyewipe.' I have heard a Norfolk man call them 'Feäwipes.' None of these forms are far removed from one another; they are onomatopœically formed from the cry of the bird, as Cuckoo, 'Pink' or 'Spink' (*Fringilla cælebs*), and 'Corncrake' or 'Middy Creek' (*Crex crex*). The consonants are certainly changed, but in dialect forms of pronunciation this is very observable, as, for instance, in surnames 'Whaplode' becomes 'Whaplock,' and 'Marsden' turning into 'Mastin.' The family of Tyrwhitt, Terwyt, or Turrit, as the word is variously spelt, without doubt takes its name from the Lapwing. They bear Peewits as their coat-of-arms. Rev. F. O. Morris gives 'Pe-wit' and 'Te-wit' as local names. The Scotch form about Edinburgh is 'Peesweeps.' The Old English is 'Wype.' The French local form, or rather one of them, is 'Dix-huit.' They think the cry sounds like this word softly pronounced. The classical French name is 'Vanneau,' from '*Vanner*, to winnow,' which equals our 'Lapwing' and the Latin *Vanellus*. We often find the cry, habit, motion, flight, colour, and place of resort of our birds indicated both in their classical and provincial names. Among the former we have Wryneck, Woodpecker, Wagtail, and Tree Creeper, and for the latter good examples are 'Featherpoke' (*Phylloscopus trochilus*), 'Bottletit' (*Acredula rosea*), 'Bletherpate' (*Fulica atra*), Bog Bumper (*Botaurus stellaris*), and the 'Fern Owl or Goat Sucker (*Caprimulgus europæus*).—Max Peacock, Cadney, Brigg, 3rd October 1898.

NOTE—REPTILES.

Yorkshire Vernacular Names for Reptiles.—Adders are known as 'Hag Worms,' and Newts as 'Askeds.'—OXLEY GRABHAM, York, 10th Oct. 1898.

NOTE—ENTOMOLOGY.

Yorkshire Vernacular Names of Insects.—At Easington, in Holderness, Gnats are called 'Buards,' Earwigs 'Furking robins' and Daddy-long-legs 'Tommy taylors.' In other parts of the county Ants are called 'Pismires,' Earwigs 'Twitch-bells,' large Moths 'Buzzards.' OXLEY GRABHAM, M.A., M.B.O.U., York, 10th October 1898.

NOTE—MAMMALIA.

Yorkshire Vernacular Names for Mammals.—It may not be out of place to mention here a few county names for various mammals. A Mole, 'Moudie' and 'Moudiewarp'; Hedgehog, 'Urchin' and 'Prickle-back Hurchin.' The Shrews are known as 'Blind Mice,' but one keeper I knew always called them 'Artystraws.' On inquiry I found he was a Gloucestershire man, though whether this is their usual name there I am unable to say. Badger, 'Brock' and 'Grew'; Stoat, 'Clubster,' 'Clubstart,' and 'Foumart'; Marten, 'Marten Cat'; Hare, 'Grass Cat'; Rats, 'Rattons'; Porpoise, 'Porpoise Pig.'

At Easington, in Holderness, a Bat is known as a 'Blackbeeraway,' the Mole is a 'Moldard,' and a Weasel is a 'Wressel.' The name 'Grunter' for the Hedgehog is used in the Wakefield district.—OXLEY GRABHAM, York, 10th October 1898.

NOTE—FISHES.

Sunfish at Redcar. I have to record a Short Sunfish (*Orthagoriscus mola*) caught by a Redcar fisherman on 1st October. It measured about 2 ft. in length, so was only a small specimen. It was on the top of the water—a calm, foggy day—and the man struck the gaff into it and got it into his boat.—T. H. NELSON, The Cliffe, Redcar, 24th October 1898.

NOTE—MOLLUSCA.

***Balea perversa*, etc., in North Lincolnshire.**—I have to note the occurrence of *Balea perversa* under loose bark of willows on banks of Freshney, Little Coates, Lincs., Div. 4, if you have not that locality for it; also *Succinea putris* and *Zonites alliarus* on mossy tree stumps at Laughton, Lincs., Div. 5.—A. SMITH, Hon. Sec., Grimsby Nat. Soc., 24, Peaks Field Avenue, Grimsby, 31st October 1898.

NOTE—BOTANY.

***Cornus sanguinea*: a New Record (?) for West Yorkshire Lune Basin.**—Whilst looking over an old London Catalogue marked for Leck, West Lancashire, I came across a note on *Cornus sanguinea* L. in hedge, roadside from Yenholmes Hall to Burton, Yorkshire—i.e., 'Black' Burton—1892, some hundred yards beyond the boundary line of the counties. As the species was not recorded in the 'Flora of West Yorkshire,' I wrote to Mr. Lees. He replied that if the subsoil was limestone the plant was probably native, if not on limestone most probably planted. There was a cottage, certainly, on the other side of the road, some distance away. To fill the gap then, until more is known about it, I send this note and call it '? Denizen or planted.' The species is common enough in the limestone area of Silverdale, the other end of West Lancashire, v.c. 60.—S. L. PETTY, 8th November 1898.

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